

## Managing open source

From a new industry organization to upgraded tools, open source network management is gaining steam. **PAGE 8.**

## About that bill

Verizon Business promises its telecom expense management service will catch billing errors ... even its own. **PAGE 10.**

## Blogging out of bounds

'Net Buzz tries a case that involves a law professor, an adware expert and a class-action suit against Yahoo. **PAGE 66.**

# NETWORKWORLD

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May 15, 2006 ■ Volume 23, Number 19

## Ⓐ WiderNet



The Minneapolis Public Library's high-tech book handling system, similar to the one pictured here, will process 6,000 items per hour.

## And it even has books

New library packed with state-of-the-art technology.

BY ANN BEDNARZ

**M**INNEAPOLIS — It was biting cold in Minneapolis on Feb. 17, the day the city's public library IT staff moved their gear from a temporary site to the new, high-tech library downtown.

"The day started out at minus 15 at my house and the wind chill was about minus 35," recalls Sharon Kinsmith, manager of systems and telecommunications for the Minneapolis Public

**See Library, page 65**

## Sarbanes-Oxley: Too much for too little?

BY ANN BEDNARZ

Faced with a tidal wave of complaints about high costs and implementation difficulties, federal regulators say they will consider modifying rules and auditing standards related to the Sarbanes-Oxley Act.

Executives from companies including General Electric, Lockheed Martin and Emerson Electric spoke about the challenges of complying with the legislation during an all-day roundtable held last week in Washington, D.C. Most participants agreed that two years

of SOX compliance has shored up corporate accounting practices—but at a cost that's lopsided compared with the benefits gained.

The Securities and Exchange Commission (SEC) and the Public Company Accounting Oversight Board (PCAOB) arranged the roundtable to solicit feedback about SOX Section 404, which requires companies to attest to the effectiveness of internal controls put in place to protect financial reporting systems and processes. Representatives from these bodies said they're open to suggestions about how to relax the burden of Section 404 compliance.

**See SOX, page 16**

ads, and while that business is under pressure from Yahoo and Microsoft, the enterprise represents a wealth of potential, especially as Web-based services and Web 2.0 technologies are taking off.

Google officials repeatedly said last week they were refocusing their efforts on being a search company because they believe that is where the future lies and Yahoo, Microsoft and others are not focused on that area. Google claims to devote 70% of its development efforts to search, and Schmidt said it had fallen behind on that tenet.

He said the strategy would be to build everything around search, and the products introduced last week were described as "advancing the state of the art in search."

Analysts say coming into the enterprise on the back of Google's Search Appliance may be Google's best bet, but that doesn't mean others aren't watching.

"Growing from the bottom up sounds right," says Matt Brown, an analyst with Forrester Research. "But

**See Google, page 14**

## Google calls search its key to enterprise

BY JOHN FONTANA

MOUNTAIN VIEW, CALIF.—Google has its eye on the enterprise. The company doesn't plan to come busting through the front door, however, but is banking on its search technology and user adoption of its productivity tools to get onto corporate desktops.

The company last week introduced at its annual press day a number of tools that will help users find, organize and share information. The tools, which are intended to enhance searching, include Version 4.0 of Google Desktop, which features small, customized applications called Gadgets; Google Co-op for targeted searching and sharing of links; and Google Notebook for capturing, saving and sharing links and text from online research.

"The corporate products we are doing step by step," said Eric Schmidt, CEO of Google. "We just did One-Box, which allows you to get data securely from enterprise back ends. You should expect more of that in the future."

Nearly all of Google's revenue comes from online

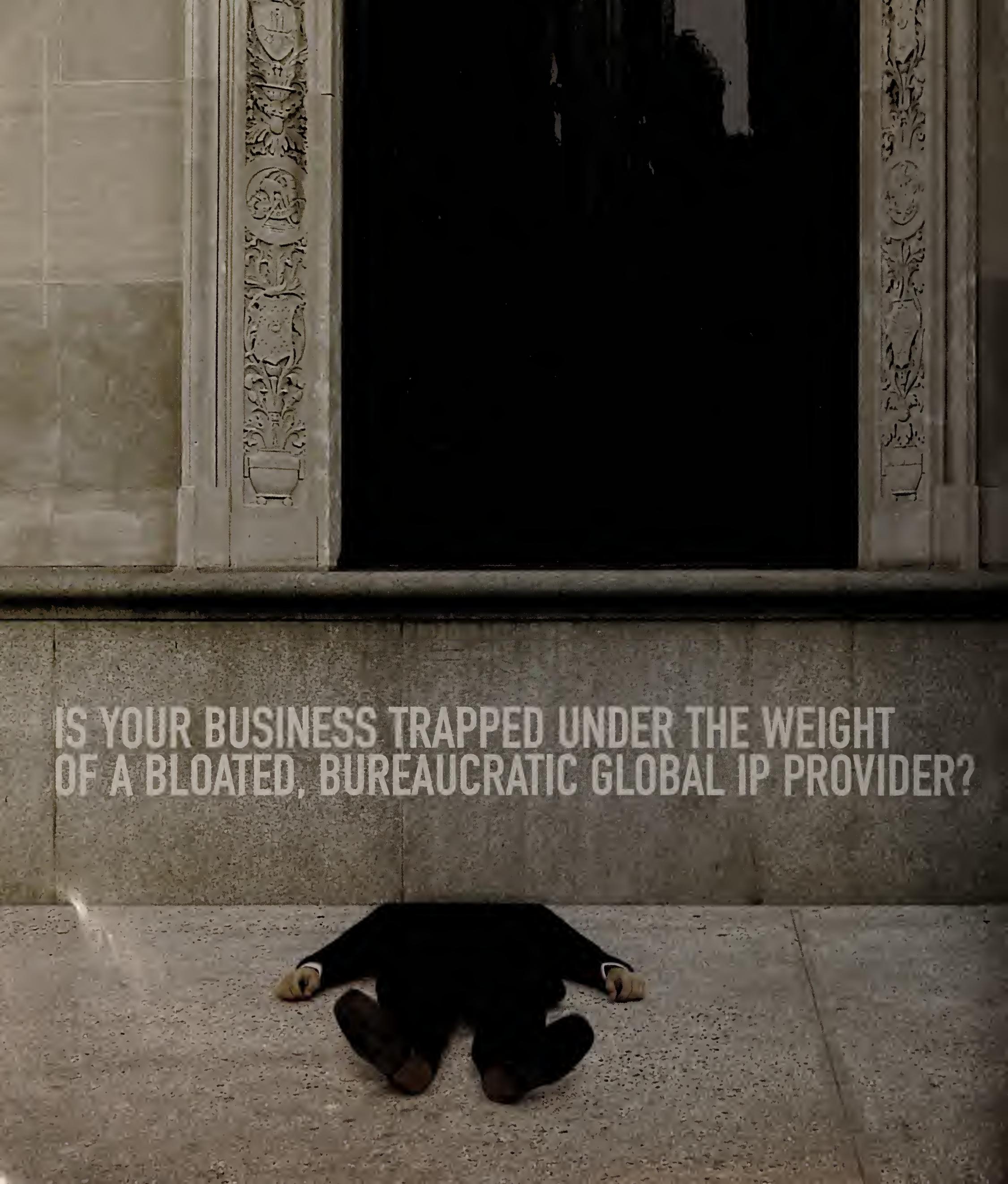
## guide to Voice over IP

### HOW TO SECURE your VoIP network:

Security expert Dave Piscitello runs down the top VoIP-specific threats and provides a checklist of countermeasures. **PAGE 45.**

**The BUSINESS CASE for VoIP:** Results from an exclusive Nemertes Research study provide benchmarks for how much you should be spending for your VoIP rollout and how to calculate the payback. **PAGE 50.**





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[microsoft.com/getthefacts](http://microsoft.com/getthefacts)



Windows  
Server 2003

# NETWORKWORLD

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## COOL TOOLS

The ultraportable HP Compaq nc2400 weighs less than 3 pounds and has a 12.1 inch widescreen display. **Page 40**

# guide

## Voice over IP

### How to secure your VoIP network:

The threats are out there — phreakers, fraudsters, SPIT, RATS, men-in-the-middle, broadcast storms — but there are countermeasures you can take to protect your VoIP network. **Page 45**

### The business case for VoIP:

Results from an exclusive Nemertes Research study shows that companies are taking their VoIP deployments more seriously these days — spending more money on planning and making sure they can document ROI. **Page 50**



GIACOMO MARCHESI

■ **CONTACT US** Network World, 118 Turnpike Road, Southborough, MA 01772; **Phone:** (508) 460-3333; **Fax:** (508) 490-6438; **E-mail:** nwnews@nw.com; **STAFF:** See the masthead on page 14 for more contact information. **REPRINTS:** (717) 399-1900  
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#### Vista news and blog

News about Microsoft's Windows replacement is coming faster these days. Keep up to date with our new Vista page.

**DocFinder:** 3446

#### Gibbsblog: Vonage, enough already

COLUMNIST Mark Gibbs uses Vonage, which means he's getting deluged with messages from the company about its upcoming IPO, which means he's getting annoyed.

**DocFinder:** 3448

#### Vista and faxes

Cool Tools Editor Keith Shaw gives you a glimpse at technology from Kodak that could make for better cameraphone photos.

**DocFinder:** 3447

Columnist James Gaskin takes a look at the implications of the (sure to ship eventually) Microsoft Vista and a federal law on the topic of digital signatures. **DocFinder:** 3449

### Online help and advice

#### Problems sending e-mail to one particular company

Help desk guru Ron Nutter tries to help a user whose e-mail just won't go through to one company.

**DocFinder:** 3450

#### State of the threats

James Gaskin discusses spam and other security stuff and solicits recommendations for the best SMB resellers. **DocFinder:** 3451

#### HIPAA troubles

A security manager for a state

agency is concerned about how the agency is complying with the Health Insurance Portability and Accountability Act — to the point of worrying whether he could one day face jail time. Read his particulars, then suggest answers.

**DocFinder:** 3452

#### All hail PDAs

Analyst Robin Gareiss explains how the devices could keep you up and running even if your primary broadband connection goes down.

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### Seminars and events

#### Application & Content Security: Building The Defensible Network

Learn how today's "fortress network" integrates VoIP and wireless into the security grid; implements automatic patch management; audits performance and identifies weaknesses; and protects core data and critical applications. Attend the free Technology Tour event your enterprise doesn't want you to miss. For cities and dates and how to qualify to attend free, see: **DocFinder:** 3455

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# NEWSbits

## Microsoft, Google dodge the obvious

■ Microsoft CEO Steve Ballmer last week downplayed his company's rivalry with Google, saying Microsoft is more focused on creating Internet content and other services that will lure advertising revenue than on what Google specifically is doing. The thought echoed a comment made by Google Co-founder and President of Products Larry Page at a Google press event the day before. Page said that Google is too busy creating its own services to cast more than a wary eye on Microsoft. Despite his comment, Ballmer said Microsoft is determined to climb to the top of the Internet advertising revenue chain from its current No. 3 position. That means Google, which is No. 1 in Internet advertising revenue, is in the company's way. "We'd like to be No. 2 and then No. 1 in advertising," he said, adding, "Let's not focus on Google. The key is, what about the advertising business model? Have we done everything we need to do to drive advertising as a business model?"

## RFID innovation promises privacy

■ Sometimes innovative ideas are simple. Here's one: an RFID chip with a perforated edge that lets consumers tear off part of the antenna after purchasing an item, reducing the distance of the signal and easing privacy concerns. The Clipped Tag label is the brainchild of Paul Moskowitz, an inventor and researcher at IBM. Ultrahigh frequency radio frequency identification tags are generally readable at distances up to 30 feet, but the Clipped Tag innovation reduces that distance to between 1 and 2 inches. "This means that the tag can only be read if the consumer holds the tag up to a reader," Moskowitz said Wednesday. "It puts choice in the hands of the consumer." IBM has tested the commercial adaptability of the Clipped Tag system with Marnlen Management, which manufactures RFID labels, and Printronix, a producer of printing systems.

## DoD taps Microsoft maps

■ A U.S. Department of Defense agency and Microsoft will collaborate to improve Microsoft's Virtual Earth

### COMPENDIUM

## Back it up — again

An Oregon hospital reports it lost 5,000 archived X-ray images when four of the five hard drives in its GE storage system died. GE is now building the hospital a backup storage system. **Find out more at [www.nwdocfinder.com/3445](http://www.nwdocfinder.com/3445).**

## The Good The Bad The Ugly



■ **Spammer gets the slammer.** A 20-year-old member of the "Botmaster Underground" who pled guilty to federal charges of conspiracy, fraud and damaging government computers last week, was handed a 57-month prison term — the longest such penalty ever given for spreading computer viruses, according to a Reuters report. Jeanson James Ancheta was convicted of infiltrating computers and turning them into zombies capable of distributing spam, the report says.

■ **Dell issues warning.** Dell spooked investors last week by warning that it will miss its quarterly profit forecast and barely hit its revenue estimate. The company attributed the shortfall to a decision to cut prices, though CEO Kevin Rollins pledged that the strategy will generate strong growth in the future.

■ **Chapter 11 for Silicon Graphics.** Things continue to go downhill for Silicon Graphics, as the high-end computing vendor last week filed for Chapter 11 bankruptcy protection. As part of a restructuring, the company said it would cut its debt by \$250 million. The company, which has been hurt by the explosion of low-cost alternatives to its workstations and servers, is hoping to emerge from Chapter 11 by year-end.

spokesman. The contract must still be signed off by the city solicitor, or attorney, and by Mayor John Street, but there are no more major political hurdles to be crossed. Philadelphia's wireless plan inflamed a national debate over municipal networks, with established broadband providers criticizing the fairness and the business wisdom of governments getting involved in owning, operating or maintaining broadband systems. Once Philadelphia's wireless plan is approved by the mayor, EarthLink will seek permits and hopes to start rolling out the network in mid-June.

## Mitel files for IPO

■ IP PBX maker Mitel Networks last week filed for an IPO in the United States and Canada. The VoIP vendor said that Morgan Stanley, RBC Capital Markets and Merrill Lynch will be among the underwriters, according to documents Mitel filed with the U.S. Securities and Exchange Commission. A Mitel spokesman said the company could not comment on the financial details of the offering. According to financial documents filed with the SEC, Mitel had \$285.2 million in revenue as of Jan. 31, and a net loss of \$21.9 million (the company's fiscal year ended in April 2006). At the same time a year ago, Mitel made \$251 million in revenue with a loss of \$34 million. Hardly a nascent start-up, Mitel was founded in 1973 as Mitel Corp., and was a pioneer in the PBX market, making telecom equipment and semiconductors, among other products. In 2001, the company divested its telecom business. The company's founder, Terence Matthews, acquired 90% of that business and took the company private, renaming it Mitel Networks.

quote of the week  
quote of the week  
quote of the week

**"Microsoft's brand is synonymous with a lot of things, but security is not one of them."**

*John Thompson, CEO of Symantec, speaking at the Symantec Vision Conference last week*

**See story at [www.nwdocfinder.com/3458](http://www.nwdocfinder.com/3458)**

mapping program for military and non-military purposes, the company announced last week. Microsoft signed a letter of understanding with the National Geospatial-Intelligence Agency, which is a Department of Defense combat support agency, the company said. Microsoft and NGA will use Virtual Earth, part of Microsoft's Windows Live, for tasks such as guiding relief efforts for natural disasters. The program was used during Hurricane Katrina last year to direct first responders and government branches, Microsoft said. Neither party specified the potential military applications of Virtual Earth or its APIs beyond "national security efforts."

## Philly council OKs Wi-Fi plan

■ Philadelphia's city council has approved a contract for a citywide Wi-Fi network it hopes will stimulate the economy of the fifth-largest U.S. city and bring broadband Internet access to poor neighborhoods. The council unanimously approved the deal, under which ISP EarthLink will pay for the network and operate it at no cost to the city, said an EarthLink

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Building Networks for People

# Open source management arrives

Vendors address user pain points, integration, usability and support for open source mgmt. applications.

BY DENISE DUBIE

Six open source project sponsors last week founded an industry organization to elevate the status of open source management tools in enterprise IT shops.

The Open Management Consortium (OMC) says it will develop standards to simplify the job of integrating disparate open source management applications in an effort to make managing large enterprise networks with open source tools easier for users. Most companies use several management tools, but the majority of proprietary products available today require extensive integration for them to share data — even when they're from the same vendor. The OMC proposes its members develop common methods of collecting, sharing and reporting on management data collected across enterprise networks.

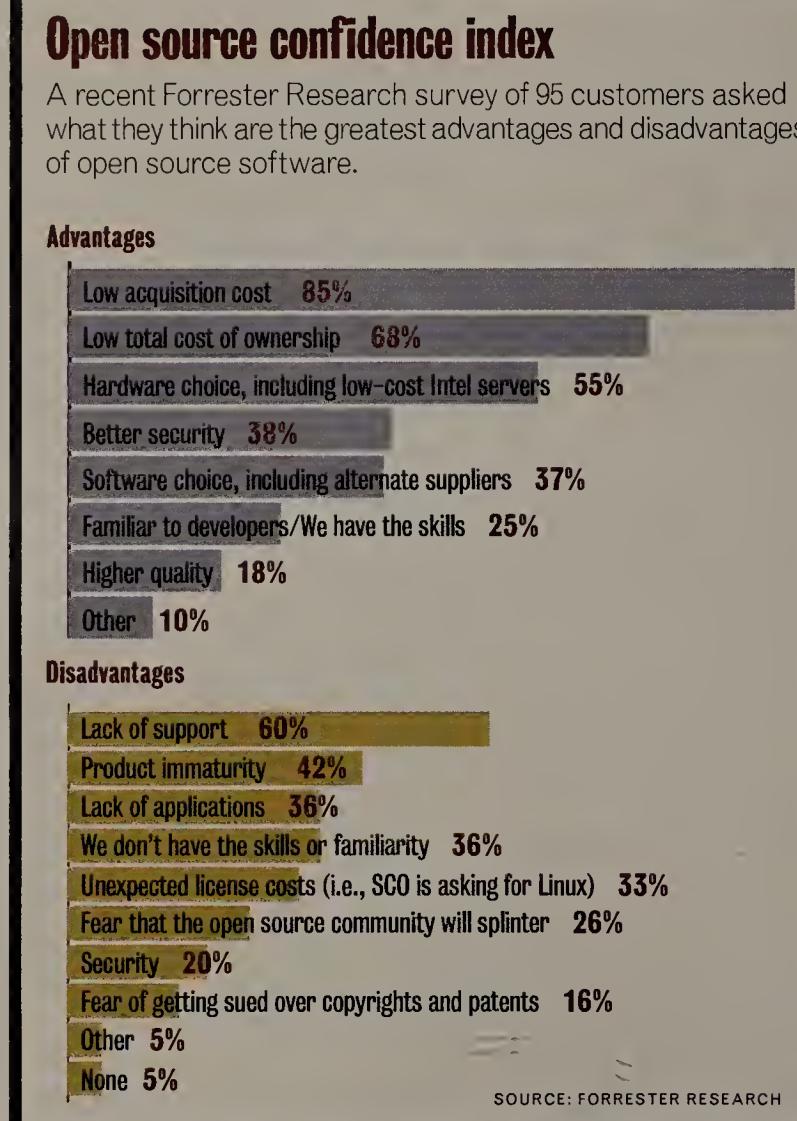
The group doesn't consider itself in competition with commercial vendors, and would like to see market leaders BMC Software, CA, HP and IBM contribute to the effort so buyers can integrate source applications more easily with commercial products.

## Vendors joining in

Vendors such as Centeris, GroundWork Open Source, Hyperic and Splunk have started to open parts of their proprietary software code and make it available through open source licenses. They separately emerged in the past year and straddled the open source and proprietary worlds, offering management applications rooted in open source and in some cases, providing free versions for download.

Management heavyweights such as IBM and CA have separately shown their support for open source as well. About a year ago IBM acquired open source developer Gluecode, and last fall CA spun out its Ingres database technology into an independent open source database company.

"The tide is starting to turn. There are more open source management products, and commercial vendors are getting more interested in exploring and inte-



SOURCE: FORRESTER RESEARCH

grating with open source, which can only benefit the end-user community," says Ethan Galstad, founder and president of Ayamon, an OMC member.

Galstad also created and remains the lead developer of Nagios, a 7-year-old open source network monitoring tool that has been the basis for commercial products from Hyperic. Galstad says the willingness of management vendors — albeit smaller start-ups — to open their source code shows the market is ready to adopt open source management.

"Open source tools have always been strong in IT departments and used by technical engineers, but it has not been until the past year that I have seen commercial vendors taking their proprietary tools and making them open source or providing parts of them under an open source license," Galstad says.

Such vendor interest in open

source could spur adoption among hesitant IT managers concerned about the community behind the source code, industry watchers say.

"The OMC is a sort of reassurance to IT managers that there is a committed community behind open source systems management," says Raven Zachary, a senior analyst and head of the open source practice at The 451 Group. "The group has indicated it will work toward developing common APIs and a common integration layer, so IT managers won't have to worry about weaving disparate systems together on their own."

The premise of the OMC appeals to buyers because standards for collecting and sharing management data could address a critical pain point: Freeware applications and proprietary products remain difficult and time-consuming to install, integrate and customize.

Rick Beebe, manager of system

and network engineering for ITS-Med at the Yale University School of Medicine in New Haven, Conn., says he already uses open source products to augment commercial tools, but an organization dedicated to hashing out integration issues would benefit his open source deployments. "Much of the programming I end up doing is glue to tie different applications together. If they all spoke a common language and I could plug them together however I'd like, it would save a great deal of time and energy."

Beebe says he likes open source tools "because of the customization and ability to try them on my own terms." And the cost is right: "The number and complexity of systems we have just keeps growing, but we're rarely allowed to add more people to manage them."

Jim Stalder, CIO at Mercy Health Services in Baltimore, admits he was hesitant about opting for the open source enterprise monitoring application Zenoss over BMC Performance Manager (previously Patrol). But considering the possible \$500,000 price tag he would have spent on most commercial management software products, he says he thought he'd give the free product (under the GNU General Public License) a try before committing budget dollars.

"We don't have a huge development staff so I didn't want to get an open source product in here if we had to worry about developing it, maintaining it, supporting it and growing it to fit our needs," Stalder says. "But on the contrary, we are only using what we need, and we can grow Zenoss at our own pace rather than pay for a lot of great features from a commercial vendor that we never put to use in our environment."

## About the members

OMC founding members — Nagios (sponsored by Ayamon), NetDirector (sponsored by Emu Software), openQRM (sponsored by Qlusters), openSIMS (sponsored by Symbiot), the Webmin project and the Zenoss project (sponsored by Zenoss) — say being able to work together

toward a common goal will help their individual open source projects mature.

The commercial software vendors in the group that have opted to make some of their code available as open source have already reaped some benefits. For instance, since making its server resource-management software available as the open source openQRM (\$750 per managed server) in February, Qlusters says the software has been downloaded more than 10,000 times.

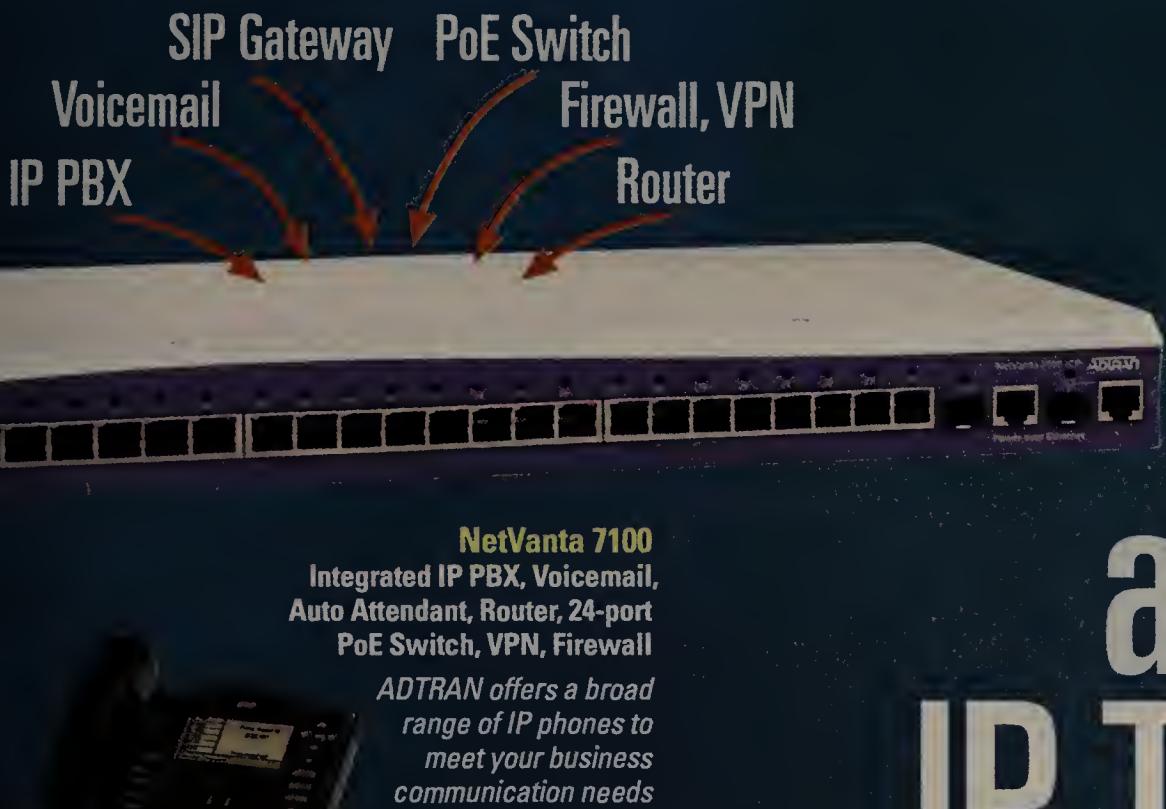
Zenoss has been downloaded 2,000 times since it went open source under a modified version of the Mozilla open source license in February. And Emu Software's NetDirector configuration-management tool has been downloaded 1,200 times since the company made it available in April under a similar modified Mozilla license model.

For Webmin, a Web-based interface for Unix system administration, the benefit of joining OMC is group development. Up to this point the tool has been developed primarily by a single person, industry veteran Jamie Cameron.

Member Symbiot took its proprietary security-management product and opened the source code to offer openSIMS (open Security Infrastructure Management Systems), which is available under an Apache license. The software runs on a dedicated server at the network perimeter, creates a map of IT components and measures risk based on data collected across the infrastructure.

In conjunction with the OMC launch, the company revamped the open source product and now offers it prebuilt to customers so they don't have to dedicate time and resources to getting it integrated and up and running.

"Open source management historically has been a bunch of fiefdoms that haven't come together in a comprehensive way for end users," says Mike Erwin, founder, president and chairman of Symbiot. "The industry really needed something that could combine the efforts and help mature the separate projects on a similar path." ■



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# Verizon wants to manage your bills

Service management offering lets customers track telecom expenses.

BY DENISE PAPPALARDO

Verizon Business this week will launch a comprehensive telecom expense management service, the first such offering from a major carrier.

The Verizon Business Integrated Telecom Expense Management Service is a suite of managed services that let corporate and government customers monitor, analyze and track telecom service expenses for their wireline and wireless services. The TEM service lets users track circuits, WAN routers, wireless rate plans and handheld devices.

"Enterprise users are expected

## Verizon's TEM

Verizon Business is launching the first telecom expense management service from a carrier. It includes:

### For wireline:

- Inventory asset tracking (lines, circuits, gear)
- Contract administration
- Invoice auditing
- Dispute resolution

### For wireless:

- Procurement
- Rate plan analysis
- Fraudulent-usage analysis
- Invoice processing
- Asset tracking (handheld devices)

to spend \$550 million on telecom expense management tools and services this year," says Eric Goodness, vice president of research for Gartner's managed and professional network services organization.

That's \$105 million more than was spent in 2005, so customers are willing to spend to save. But will they be willing to buy such tools from one of the carriers behind those cumbersome and often incorrect bills?

Some users seem skeptical, but Verizon Business is giving it a try.

Verizon is using different platforms to track wireline and wireless services.

"No other carrier has made a formal announcement about a

discrete, focused market offer for multicarrier TEM services," Goodness says. "It's a very powerful offer."

Verizon has teamed with Symphony Services, which has developed an analytical software platform to track wireline services from a number of service providers. The tool keeps track of lines, circuits, customer premise equipment and WAN gear. The platform lets Verizon provide inventory asset tracking, contract administration and bill auditing.

That means that Verizon Business, on behalf of its customers, will review all telecom invoices and note any errors. When asked what happens when errors are discovered on Verizon bills, the carrier says they will be dealt with the same way as if they were found on any other carrier's bill.

"We're trying to take a nonpartisan view and treating Verizon Business no differently than any other vendor so we don't get into a 'fox watching the henhouse' scenario," says Cliff Cibelli, group manager of managed network services.

And like many telecom bill auditing firms, Verizon Business will provide dispute resolution and remediation, the latter as an add-on service for customers.

Verizon Business customer Euler Hermes, the global credit insurer, says it is not interested in TEM services from any carrier.

"We want to be in control," says Dave Kozlowski, vice president of technical services for Euler Hermes' North American arm in Owings Mills, Md. "We don't want to have to rely on a vendor."

Euler Hermes is not the only customer that would question handing over its TEM to one of the largest telecom services providers in the United States. So why would an enterprise customer select Verizon's service over any of the other 90 or so TEM vendor offerings? Verizon's Cibelli says it's because the carrier has been doing bill auditing and TEM services on a case-by-case basis for its largest outsourcing customers for years. This work stems from the legacy MCI side of the house.

Gartner's Goodness points to

## Verizon services tackle disaster recovery

**V**erizon Business last week unveiled services designed to let business and government customers maintain their telecommunications in times of natural disasters, equipment failures or building evacuations.

The new group of services, called Business Resilience Solutions, addresses a range of business-continuity preparedness tasks, from assessment to implementation of network and storage capabilities. The Business Resilience Solutions portfolio is designed to address requirements for continuity, security and productivity, and the services range from traditional voice and data networking to high-availability and network-embedded applications, storage offerings, and professional services capabilities.

"A new era of business-critical systems [such as grid and utility computing] will accelerate the [business resiliency] market," says Sean Hackett, research manager of Business Network Services for IDC.

Businesses are transitioning from reactive disaster recovery to proactive business continuity, Hackett says. This view is shared by Verizon Business customer DBK Concepts, a provider of mobile data-collection systems for inventory management in the retail, grocery, wholesale and transportation industries in Miami.

"In the last two years of our business, we did have significant interruptions due to Hurricane Katrina and Hurricane Wilma," says Luis Barroso, president of DBK Concepts. "We became very proactive in looking for a solution at that time. If we miss our shipping window because of Internet disruption by one hour, our customer is down an additional 48 hours."

DBK now uses Verizon Business data centers and satellite communications for business continuity, Barroso says.

Other components of the portfolio include a

partnership with Strohl Systems, a provider of business-continuity planning software and services. Verizon Business will provide customers with consulting services, such as business impact analyses, gap analyses, strategy workshops, asset inventory development and vulnerability assessments, while Strohl's business continuity planners will work with customers to develop contingency plans to keep business operations functioning and employees, customers and suppliers connected, Verizon Business says.

Another service is the Resilient Network Attached Storage (RNAS) solution. It targets large organizations with branch offices or other remote locations, and is designed to improve the performance of storage applications and WAN infrastructure. RNAS combines network transport and access from Verizon Business, network-attached storage platforms and software from EMC, and network equipment from Cisco.

RNAS provides remote offices with dedicated, on-site file storage and sharing capabilities, while centralizing file management, security and business-recovery functions. RNAS helps ensure files are accessible anytime by staff working outside the main office, Verizon Business says.

RNAS and Strohl Systems join existing Verizon Business services, such as managed security and storage offerings unveiled last year ([www.nwdocfinder.com/3457](http://www.nwdocfinder.com/3457)), to fill out the business resiliency portfolio. Verizon Business plans to introduce additional business continuity services targeted at collaboration, mobility and supply-chain management throughout the year.

The carrier will face competition in this market from systems integrators, specialized service providers and traditional carriers such as AT&T, which demonstrated its mobile disaster-recovery capabilities at TelecomNext earlier this year.

— Jim Duffy

two other reasons why customers may select a carrier's offering over an independent TEM vendor. "A lot of very large enterprises are afraid of putting their \$300 million telecom spend in the hands of a company that only generates \$5 to \$6 million a year," he says. Verizon should be well-versed on how to audit telecom bills from third-party carriers, he says.

Cibelli says Verizon has gone through the work of integrating multiple platforms that address all of a customer's wireline and wireless telecom costs.

The carrier is working with a TEM software company that specializes in monitoring wireless services and devices, but did not share the name of that vendor. The wireless platform can be used to procure new wireless services and devices based on any number of wireless service contracts a customer may have.

The software tool also will let customers compare their wireless contracts against a database of 35,000 national plans.

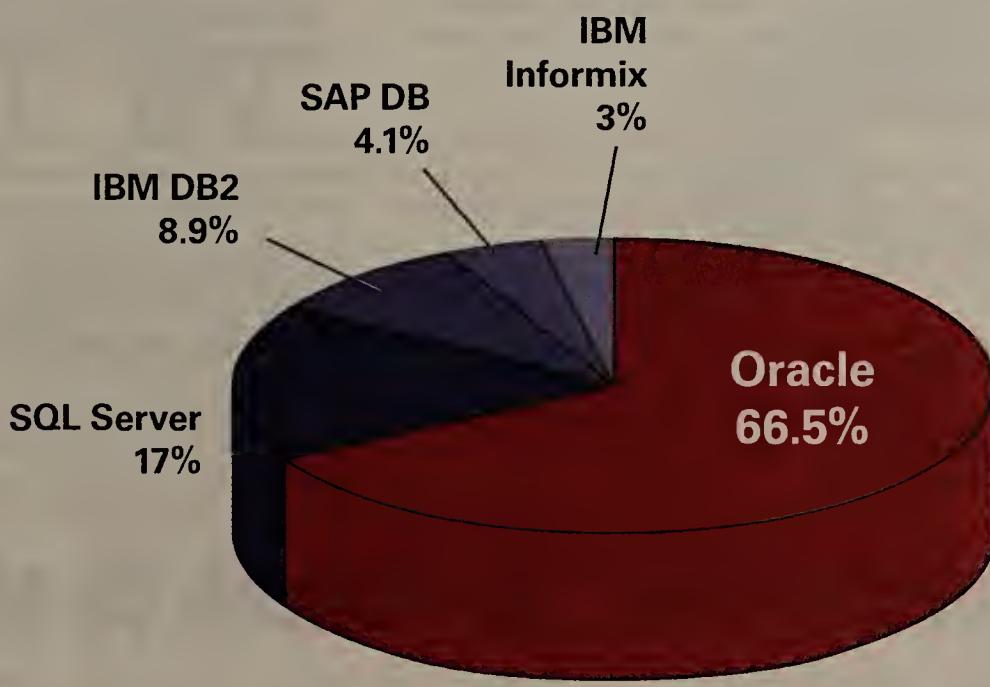
Verizon has integrated these two platforms so customers can use a

single portal to view information from both systems. The integration lets the two platforms share information so customers can calculate total telecom cost and total departmental charge-backs.

Verizon's Cibelli says the cost of its Integrated Telecom Expense Management Service depends on the number of elements that are managed, and the prices are different for wireline and wireless elements. In general, that would amount to between .75% and 1.5% of a customer's annual telecom spend, he says. ■

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# Oracle platform targets security

BY JOHN FONTANA

Oracle last week set in motion the second phase of its multiyear, three-prong plan to develop an integrated suite of identity management software using the piece parts it acquired over the last two years.

The suite's goal is to offer corporations everything from fine-tuned access control to identity federation with partners as corporations address security and compliance issues by building identity management infrastructures.

Oracle last week announced the availability of Oracle Identity Manager 10g R3, the provisioning software that is one part of the Oracle Identity Management suite. Compliance features highlight the R3 software, which was acquired last year along with Thor Technologies. Provisioning software provides a platform for giving users access to resources based on a set of roles and rules and an audit trail for who has access to what and when.

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Identity Manager R3 is the first in a series of software releases that will continue this summer when the company updates its federation software (acquired from Phaos in 2004 and Oblix in 2005), its access management software (Oblix 2005) and its virtual directory technology (acquired from OctetString in 2005).

Oracle's short-term goal is to deliver incremental upgrades to the components of its identity management suite but the ultimate goal is to align all the software under a common architecture.

"I'd characterize Oracle as having established communication among these components, but not yet integration and functional rationalization," says Jonathan Penn, an analyst with Forrester Research.

Oracle says the identity integration task will take another leap forward with the release of Oracle Identity Management 11 sometime next year.

Oracle faces the same chore as many other vendors, which is tying together a collection of software garnered through acquisition into an identity platform with

common underpinnings such as a single workflow engine.

"Oracle plans to be out front and their plan is clearly to be a leader in this marketplace," says Roberta Witty, an analyst with Gartner. But Witty says Oracle, like many others such as BMC, CA, HP, IBM and Sun, has bought its way into the identity management battle. "Who is to say if any one of them is more articulate in identity and access management than the other?" Witty says.

After last year's flurry of consolidation among identity vendors big and small, analysts agree the next few years will test if the vendors can create integrated identity suites. Experts say vendors will need to reengineer their software to adapt it to a single, common architecture.

Oracle's plan, according to company officials, is to develop its identity into a slate of network services.

"We are looking to deliver these services built on a [service-oriented architecture] platform," says Hasan Rizvi, vice president of Oracle security and identity management products.

"If you see the way that cus-

## Integration project

Oracle faces an integration chore just like other vendors that built identity management suites through acquisition. Here is a look at the components Oracle hopes to finally build in to a set of services for service-oriented architectures.

Identity category	Components	Acquired
Single sign-on and Web access control	CoreID Access and Identity	Oblix 2005
Directory services	Internet Directory Virtual Directory	Directory developed in-house; Virtual Directory from OctetString 2005
Identity administration	CoreID Access and Identity	Oblix 2005
Strong authentication	Certificate Authority Security Developer Tools	Developed in-house
User provisioning	Identity Manager	Thor Technologies 2005
Web services access control	Web Services Manager	Oblix/Confluent 2005
Federated identity	CoreID Federation	Oblix 2005/Phaos 2004

tomers are looking to consume identity going forward, part of the broader strategy is to deliver not so much an integrated suite of technologies but a set of services built on a common platform. A platform that can be used by application developers and IT." Rizvi says Oracle plans to deliver this in 2007. "We think that will be a leapfrog over just providing an

integrated suite."

He says a big part of that will be standards support. Oracle will add support this summer for SAML 2.0, WS-Federation and Liberty Alliance's Identity Federation Framework to its identity federation product along with support for the Service Provisioning Markup Language 2.0 in the next release of Identity Manager. ■

# WAN optimization market continues to shrink

BY TIM GREENE

Customer choice in the WAN acceleration area keeps getting smaller. The trend continued last week as Expand and Packeteer each announced they will snap up another competitor.

Expand Networks says it is buying DiskSites, a company that makes wide-area file services (WAFS)-enhancing gear and with which Expand already had a reselling agreement.

The purchase means Expand customers can buy combined Expand/DiskSites products at half the price they would be charged under the OEM agreement, says Expand President Amir Chitayat.

For its part, Packeteer is buying Tacit Networks' Ishared appliances to add server consolidation technology to Packeteer's PacketShaper WAN-optimization products.

Over time, Packeteer says it will make new hardware to support both PacketShaper

## WAN acceleration consolidation

Companies that make appliances to speed up transactions over wide-area networks have been gobbling each other up in an effort to get a complete set of features.

Juniper buys Peribit for \$337 million  
Juniper buys Redline for \$132 million  
Citrix buys NetScaler for \$300 million  
F5 Networks buys Swan Labs for \$43 million  
Packeteer buys Tacit Networks for \$78 million  
Expand Networks to buy DiskSites for an undisclosed amount

April 2005  
April 2005  
June 2005  
September 2005  
May 2006  
Pending

and Ishared software so customers can buy one box and upgrade it as needed.

These purchases are an effort to catch up with other WAN acceleration vendors that offer more features, says Rob Whiteley, an analyst with Forrester Research. He says Riverbed has the best collection of features and that others are trying to keep pace. Competitors include Certeon, Cisco, Citrix, Juniper, Orbital Data, Silver Peak and Streamcore. Four other companies that sold

such products were bought out in the past year (see timeline).

This class of device is generally deployed in pairs at both ends of WAN connections. They use a variety of technologies — compression, caching, application acceleration, TCP optimization — to decrease the number of bits crossing the WAN and to improve response time for transactions. This can result in better performance and cost savings by making wide-area circuits act

as if they have more bandwidth than customers are paying for.

According to Infonetics, the WAN optimization appliance market increased 49% worldwide in 2005 to \$236 million. Infonetics forecasts double-digit annual growth at least through 2009. When ranked by revenue in 2005, Packeteer came in first, followed in order by Expand, Juniper and Riverbed, Infonetics says.

While that is a relatively small market, it is

growing in importance because it is bringing about server consolidation, says Joel Conover, an analyst with Current Analysis. As businesses pull servers from branch offices and centralize them they need to respond to complaints from workers in branch offices who find accessing servers over the WAN unacceptably slow, he says.

He says it is essential to speed up these transactions to make server consolidation succeed.

Customers are in a bind, though, Whiteley says. Many are forced to buy one of these products to fix an immediate need. "If you spend millions of dollars on an SAP rollout and it's not working, then a \$100,000 investment in a Riverbed box that makes it work might be smart," he says.

But network vendors, notably Cisco and possibly Juniper, seem intent on putting this type of technology in routers within five years, he says. That leaves customers uncertain whether to buy an appliance now, hoping they will evolve to meet new needs, or wait until their next network bandwidth upgrade and hope that fixes the problem, Whiteley says. ■

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**COMMUNICATIONS  
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**Google**

continued from page 1

they are going to have to continue investing in the Google Desktop and Search Appliance to keep competitive."

"Google will have the most impact on small businesses," he says. "If you have the Search Appliance suddenly you have all this tooling around it [mail, calendaring, desktop, word processor] and it delays you going out and buying a collaboration platform."

Google's step-by-step approach to the corporation can be seen in its OneBox for Enterprise, which was introduced last month as a feature of Search Appliance, which is Google's only revenue-generating enterprise product.

OneBox has been used for years on Google's consumer search engine; it provides specialized results when users type in package tracking numbers or keywords such as "weather."

Google now has partnerships with NetSuite, Oracle and Salesforce.com so users can get search results from those systems by typing in a query such as "quar-

## Google's corporate play?

Google Enterprise is the smallest division at the company with just more than 100 employees, and represents a barely recognizable sliver of overall revenue. Its only formal corporate products are various flavors of the Search Appliance, but Google has some ideas that could bring the division's tools into an organization through user adoption.

Software/service	Features	Enterprise qualities
Google Desktop 4	New Gadgets feature.	Provides opportunity to deliver data to users via simple applications.
Writely	Company and its online word processor acquired by Google earlier this year.	Writely had been developing a corporate version with document, security controls.
Google Co-op	Social networking tool for organizing, sharing links.	Microsoft, IBM/Lotus developing similar tools for their collaboration suites.
Google Notebook	More social networking to capture and share online research.	Users can share their notes with others.
OneBox	Search appliance can search against corporate repositories.	Announced partnerships earlier this year with Cisco, NetSuite, Oracle, Salesforce.com, among others.

terly sales results." An API released as part of Google's Enterprise Developer program lets corporate developers build connectors to other systems.

Google hopes to use the same model to introduce tools that build off the Search Appliance.

The Gadgets feature of Desktop is beta software that uses Google search capabilities to find e-mail and files and show intranet search results. The Desktop also is the

anchor for a new feature called Sidebar, which provides a quick glance at personal information and a list of Gadgets.

Gadgets are mini applications. Google has built a number of them, including a music player, and offers an API so users can build their own.

Apple has similar features in Mac OS X, and Microsoft has a feature also called Gadgets that will ship with Vista.

"Gadgets and the Sidebar are a way to deliver functionality to the desktop," said Matt Glotzbach, senior product manager for Google Enterprise. "You can have a Gadget that delivers corporate data to a personal homepage."

He said Google's consumer team is pushing features, but the enterprise team is driving security and IT requirements. "We bring the likes of Oracle and Salesforce.com to the table," Glotzbach said.

It was the corporate team that fostered a feature in Desktop that lets administrators block at the network level the "search across computers" feature, which was seen as a security risk by many IT shops.

Glotzbach said the steps into the enterprise continue with Co-op, which can be combined with OneBox to offer more relevant search results.

Co-op lets users associate Web pages with their given area of expertise and then offer those as a link that other users can subscribe to and see as part of their search results.

Notebook, which like the other tools is beta software, lets users cut and paste text and pictures from the Web into a Notebook window on the desktop. Users can save the Notebooks or share them with other users.

Marissa Mayer, Google's vice president of search products and user experiences, said the Co-op and Notebook tools were the company's first foray into social search. That is another area where Google will find competitors are building similar social networking tools around search for their collaboration platforms. ■

## JavaOne will showcase easier-to-use development tools

BY JENNIFER MEARS AND JOHN COX

Sun's JavaOne conference this week is expected to highlight the vendor's growing embrace of open source, as well as its move to make Java-based applications easier to deploy and integrate with legacy systems.

Sun plans several announcements at the show, including the release of Java Enterprise Edition 5, which it previewed earlier this month. The newest version of the Java specification brings streamlined, easier-to-use development tools to companies wanting to make greater use of Java-based applications, according to Joe Keller, vice president of marketing for service-oriented architecture (SOA) and integration platforms at Sun.

That means it will be easier to get Java-based applications up. That's good news — and bad news — for IT managers, industry experts say.

"For IT managers [updates to Java] mean that soon they'll have tools which will make their teams more productive and will require less highly skilled programmers to build enterprise Java programs," says Bill Roth, vice president of the Workshop Business Unit at BEA Systems. "But the issue becomes how to manage those applications."

A growing interest in open source platforms such as Tomcat and JBoss, as well as open source Java frameworks such as Eclipse and Struts, also could

add to IT managers' headaches, analysts say. That's because as open source becomes a larger part of Java deployments, there are questions around how to manage those open source components.

Vendors are addressing the issue. BEA, for example, is updating the management console for its WebLogic application server to manage other platforms better.

IBM, meanwhile, is expected to announce a program that will make it easier for independent software vendors to write applications for its WebSphere Application Server Community Edition, built on the open source Apache Geronimo application server. That will give customers more pre-integrated packages built on open source, IBM says.

In addition to talk about managing Java in mixed environments, there will be talk at the conference about the use of Java on mobile devices, as it turns from simply supporting games and other "cool trinkets" on PDAs and smart-phones to becoming a platform for enterprise applications, says Peder Ulander, vice president of marketing for Sun software.

Sun expects about 14,000 developers to attend JavaOne, which is at the Moscone Center in San Francisco, about the same number as last year, Ulander says. In addition to newly appointed Sun CEO Jonathan Schwartz, executives from BEA, IBM, Oracle and Motorola will be giving keynote addresses. ■

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**SOX**

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"The Sarbanes-Oxley Act was a critical step in addressing an unprecedented string of corporate scandals that were rooted in very serious governance, accounting and audit failures," said SEC Chairman Christopher Cox in his opening remarks. Section 404 has the potential to improve the accuracy and reliability of financial reporting, but only if it's implemented properly, Cox said. "In practice, it hasn't always worked out that way."

Bill Gradison, acting chairman of the PCAOB, added that guidance the SEC issued last year and PCAOB's latest auditing standard may not be enough to clarify the rules that govern the reporting and auditing of internal controls. "Based on the information we already have, it would seem that some further changes may be in order," Gradison said.

Among the changes panelists advocate is greater latitude for auditors to use their judgment in determining which controls are most significant.

Mary Bush, president of consulting firm Bush International, said there's a need for guidance from the SEC and PCAOB around the areas that pose the greatest risk to accurate financial reporting. "There still seems to be as much emphasis placed on low-level process controls as there is on controls that really have a risk for incorrect financial reporting."

Several panelists agreed that companies and audit firms need to pare back the number of controls that are tested.

Business managers at British Petroleum find it's useful to identify, document and test the effectiveness of internal controls, but balk at the duplication of testing required by staff and internal and external auditors, said Keith Holmberg, vice president of financial control processes at the global energy company. All that testing starts to dilute the sense that it's good business practice, he said. "For us that's probably been the biggest area of frustration."

The evaluation of IT-related controls, in particular, leaves a lot to be desired, said Susan Gordon, corporate controller at CBS. Audit firms today tend to use canned control questionnaires, not tai-

## Relief, please

Financial Executives International asked 274 companies how the implementation of Sarbanes-Oxley Section 404 could be made efficient or effective. These are their top recommendations:

- Reduce the degree of documentation (**67%**)
- Permit greater reliance on internal audit data and resources (**66%**)
- Permit roll-forward procedures (**58%**)
- Clarify the definition of "key controls" (**55%**)
- Allow cumulative reliance on the first year's testing and documentation (**53%**)

lored for specific situations, in evaluating controls rather than taking a more relevant, risk-based approach to reviewing IT controls, she said.

Adding to the burden at CBS is that more than 90% of its IT controls are manual. Looking ahead, Gordon hopes to see that drop to 80% in 2006. As new applications and systems are deployed, IT staff will design the necessary controls from the start, Gordon said. "IS and IT are onboard with this, and they see this as a great opportunity," she said.

Stephen Sherwin, chairman and CEO of biotech firm Cell Genesys, said the topic of IT controls illustrates the huge burden Section 404 places on smaller public companies — including his.

"404 oversight in the IT area is particularly onerous to smaller companies," Sherwin said. "The problem is that the lack of adequate staff and infrastructure forces the hand of the smaller public company to seek outside consultative support to carry out the necessary testing." That expense adds up to "our never having any confidence that the cost requirement of implementing these regulations as they are now defined will go down over time," he said.

Sherwin was the sole CEO of a small public company present at the roundtable, but he wasn't the only panelist to address the SOX burden on smaller public companies, which have to begin complying with Section 404 next year.

An SEC advisory committee in April recommended establishing a scaled-back regulation for smaller public companies that don't have the resources to comply with Section 404 requirements in their current form. But panelists pointed out having sound internal controls is important to businesses of all sizes.

would like to hear about it as well," said Kimberly Gavaletz, a vice president at Lockheed Martin.

Large public companies know all too well the cost of compliance. Financial Executives International (FEI) surveyed 274 public companies and found average compliance costs were about \$3.8 million in fiscal year 2005. Companies spent an average 22,786 staff hours internally to comply with Section 404 in 2005.

The good news is, companies with two years of compliance under their belts reported that costs dropped an average of 16%, said Colleen Cunningham, president and CEO of FEI.

But that's not always the case. GE spent about \$33 million on Section 404 compliance in 2004, and costs ran about the same in 2005, said Philip Ameen, vice president and comptroller at GE.

While GE's tally didn't decline, there are positive outcomes from the legislation. Two years of Section 404 compliance has focused the company on the controls that are most important to its reporting processes, Ameen said. "Overall, on balance, I think the management team, the board of

directors and people down in trenches doing the testing are favorably impressed with progress that has been made in the second year of 404."

FEI's survey tells a similar story. Among respondents, 44% said financial reports are more reliable, and 33% agreed that compliance with Section 404 has helped prevent or detect fraud.

But is that enough? No, according to the 85% of FEI survey respondents who believe the costs of SOX compliance still outweigh the benefits.

Despite the challenges, not everyone wants to see the rules or guidance related to Section 404 altered, given the disruption it would cause to ongoing audits.

J. Michael Cook recommended changing as little as possible and only that which is absolutely necessary. "I recognize that if you put out more guidance, there are going to be 10,000 or 15,000 people in a large number of firms that are going to have to be trained in it, figure out what it means," said Cook, who is audit committee chairman at companies including Burt's Bees, Comcast and Eli Lilly. "Everything will be in limbo again." ■

## ShoreTel's IP PBX upgrade targeted at smaller offices

BY PHIL HOCHMUTH

ShoreTel this week is expected to launch upgrades to its IP PBX operating system and phones, intended to make its enterprise-scale VoIP system emulate small-office key telephone systems — but with an IP twist.

Release 6.1 of ShoreTel's ShoreGear IP PBX equipment has several features targeted at offices with fewer than 50 employees. One feature is the ability to ring multiple phones through a single inbound number, a familiar function of retail-style key phone systems. ShoreTel also is launching low-cost IP phones and a high-end phone with Gigabit Ethernet and Power over Ethernet (PoE) capabilities. The new gear could help small shops that are hesitant to dump their familiar, stable key phone systems move to VoIP.

ShoreTel's IP PBX gear operates in a distributed way; ShoreTel's appliance plugs into the wiring closet LAN switch that connects users' IP phones. The ShoreTel boxes provide VoIP call control and features via the Media Gateway Control Protocol and the phones' dial plans, and connect to other ShoreTel boxes on the network over the LAN or WAN. This emulates a centralized, large-scale PBX, but the distributed nature of the system provides redundancy, ShoreTel says.

While they emulate old key phone systems, Shore-

Tel says its products offer the advantage of VoIP: Calls can be routed inexpensively over IP WAN connections; systems can be centrally managed via a Web-based console; and voice integration, messaging, presence and other VoIP applications are options.

Smithco Engineering, a manufacturer of industrial heating and cooling systems, uses the new IP 212K phones in its three Tulsa, Okla., locations.

"The ability to have 12 lines displayed on the screen," is a nice feature, says Randy Adams, systems analyst with the company. This lets the small firm's 84 employees pick up incoming calls no matter where the office is located.

ShoreTel also is launching the IP 212K Key System Telephone, an IP phone with 12 programmable buttons and eight preprogrammed function keys: transfer, conference, intercom, redial, voice mail, hold, options and directory. It has two 10/100Mbps PoE ports, speakerphone and LCD screen. Also new are the IP 230 Staff Telephone (three programmable buttons, two 10/100Mbps PoE ports, LCD screen and speakerphone) and the IP 560g Gigabit Telephone (two 10/100/1000Mbps PoE ports, six program keys, LCD screen and speakerphone).

ShoreTel Release 6.1 is a free upgrade to existing ShoreTel customers. The IP 212K phone costs \$300, the IP 230 costs \$260, and the IP 560g costs \$430. ■

# Symantec bids to be data center 'standard'

BY ELLEN MESSMER

**SAN FRANCISCO** — Symantec executives used their Vision 2006 customer conference last week to tout the breadth of the company's data center management offerings made possible by last year's acquisition of Veritas — but some customers and industry analysts said they still see gaps in the lineup.

In unveiling new storage and server management products under its Data Center Foundation label, Symantec is in an increasingly strong position to woo customers from competitors that include IBM, EMC, HPCA and dozens of smaller vendors specializing in storage or server management and application performance. But Symantec's lack of products to support mainframes, among other things, weakens its bid for dominion over the data center, observers said. Symantec also is obfuscating the meaning of "standard," the word it's using as a marketing drumbeat, some said.

"When we talk about creating a standard, we mean the ability to have a single layer of infrastructure software that works with everything," said Kris Hagerman, senior vice president in Symantec's data center management group. With its new products, Hagerman said Symantec is in a position to move data center managers toward standardization based on Symantec.

Symantec CEO John Thompson also sounded the theme in his keynote address to the 3,500 conference attendees, saying "the next step is standardization on a software infrastructure that supports every platform in the data center."

Some analysts pointed out Symantec's use of the word "standard" has nothing to do with any formal industry standards of any kind that would promote interoperability. Data management standards "remain very immature at this point," said William Hurley, senior analyst at Data Mobility Group. "By standardization, they [at Symantec] mean in the sense that Windows and Intel became a de facto standard."

And though focused on the data center, Symantec had nothing to say about the role of the mainframe because it has no mainframe tools nor plans for any. Tad Lebeck, vice president of data center strategy at Symantec, said Symantec has no interest in mainframe management, especially because vendors such as IBM already play a strong role there.

Marketing aside, Symantec does have a strong story to tell about its Veritas software because of its suite for centralized management of storage-area networks and servers, Hurley said.

"Veritas has been ahead of the curve because of the breadth and class of its server and storage foundation," Hurley said.

Competitors Hitachi, EMC, HP and IBM also have extensive tools suites, but they tend to be more hardware-centric, though that's changing.

While most of the Symantec Data Center Foundation announcement last week entailed rebranding of Veritas products into four groupings for data protection, storage management, server management and application performance, there also were new product additions.

The Storage Foundation Management Server, expected in July, would let network managers centralize management of Unix, Linux and Windows servers. Another upcoming product, Storage Foundation Basic, is at the heart of a subset of the Management Server that will be offered free to customers if they forego support. With support, Storage Foundation Basic would cost \$98 per CPU. According to Hagerman, the free software is aimed at use on edge-tier Web and e-mail servers.

Symantec acknowledged its bid to capture the data center is hampered by the complex, heterogeneous nature of the data-management tools often in place today.

Outsourcing provider Electronic Data Systems (EDS) manages more than 65,000 servers in 240 data centers worldwide. Larry Lozen, vice president of data center services at EDS, said the Symantec Veritas tools are deployed at EDS on behalf of its outsourcing clientele. But so are many vendors' data-management products. "Today we have one of everything," he said.

A typical contract between EDS and a customer requires the customer to accept the licensing for tools EDS has selected, should the outsourcing contract end for any reason.

EDS does want more homogeneity in its data centers and will seek to expand use of Symantec Veritas tools, though that wouldn't affect what EDS does with its "massive amount" of mainframe processing. Lozen said EDS is interested in expanding its use of Symantec tools not only because they're high quality, but also because Symantec is willing to work with EDS to build a "manager of managers" to unify management of multi-vendor data-center tools.

"We have a homegrown one, we've done it to create an umbrella, but we don't want to do this on our own anymore," Lozen said.

Another Symantec customer, the financial services firm State Street in Boston, also is expanding its use of Veritas backup and management products as it migrates from Solaris to AIX and Linux in its data centers.

While State Street regards Symantec Veritas as its preferred vendor, it can't be the only data-management player in its data centers.

Jason Gregerman, State Street's vice president of global infrastructure services,

Americas region, said the firm relies heavily on its mainframes, which he said carry "15% of the world's assets every day."

He also noted that so far, neither Symantec nor any other vendor can

achieve what State Street would really like: the ability to replicate data asynchronously to data centers as far away as 1,500 miles without extra installations or worries about loss through latency. ■

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# TOLLY Benchmarks

Volume 5, Issue 2

- 2 Mirapoint Message Server emerges as attractive alternative to Microsoft Outlook for enterprise messaging**  
Mirapoint offering delivers full functionality to Outlook clients while offering platform and security advantages over Microsoft Exchange 
- 3 Nortel Ethernet Routing Switch 5000 Series outclasses rivals in stack performance tests**  
Nortel solution forwards nearly 8X more frames and introduces up to 44% less latency than Cisco and HP solutions tested
- 4 Malicious software meets its match with Sana Security's Primary Response SafeConnect**  
Security product is designed to identify malware based on specific combinations of behaviors exhibited by the suspicious programs
- 5 BlueArc Titan 2200 network storage system excels at high performance**  
Titan 2200 delivers average sustained throughput of up to 718 MB/sec from a single Titan when handling a mix of read/write I/O operations
- 6 Modular Nortel DS3/T1 WAN router outclasses Cisco gear in throughput tests**  
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- 7 Nortel Secure Routers demo wire-speed dominance over Cisco WAN routers for branch office connectivity**  
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- 8 Tests reveal that Wiresoft Security Platform hits the mark for SMBs**  
Comprehensive bundled security platform addresses wide range of SMB security requirements without breaking the bank 

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[info@tolly.com](mailto:info@tolly.com)

phone (561) 391-5610

fax (561) 391-5810

- Installs and integrates easily into an existing Microsoft Windows 2000/2003 Server and Active Directory environment
- Offers Outlook synchronization technology that supports native Outlook client functionality
- Boasts significant features that add to the overall system reliability and stability, including built-in power redundancy, support for RAID disks and inclusion of backup/restore capabilities

Mirapoint, Inc. commissioned The Tolly Group to build a microcosm of an enterprise E-mail environment and validate specific capabilities of the vendor's Message Server appliance related to its ability to provide a "drop in" replacement to Microsoft's Exchange E-mail application.

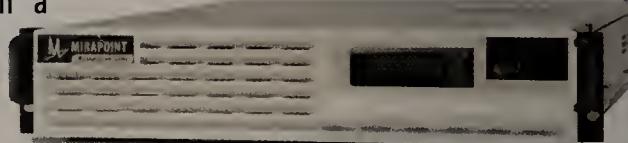
This hands-on evaluation proved conclusively that Mirapoint's Message Server appliance can provide a viable alternative to Microsoft's Windows-based Exchange Server mail transport application providing full functionality to Outlook clients via Mirapoint's Outlook SynQ technology while offering platform and security advantages over Microsoft Exchange.

Additionally, Mirapoint's browser-based client, Corporate Edition WebMail, offers a seamless transition for end users familiar with Outlook Web Access (OWA). Corporate Edition WebMail supports features like shared calendar and folders, compose pop-up windows and auto-complete addressing.

Tests show that Mirapoint's Message Server appliance is easily installed and integrated into an existing Microsoft Windows 2000/2003 Server and Active Directory environment. Its appliance implementation provides far greater reliability and robustness than Microsoft Exchange which is typically implemented

# Mirapoint Message Server emerges as attractive alternative to Microsoft Outlook for enterprise messaging

as an application installed on a general-purpose Windows server platform.



into its appliance to provide an overall secure messaging infrastructure.

Rather than having its own duplicate directory for system users, Mirapoint's Message Server appliance uses Microsoft's standard Active Directory application programming interface (API) to communicate with an Active Directory server to fetch and store user information. This integration is an essential element of the "plug-and-play-compatibility" of the Mirapoint solution.

From an E-mail perspective, all of the critical functions of the Outlook client work the same when communicating with Mirapoint's mail hub as they do when communicating with a Microsoft Exchange Server system.

For Web-based users, Mirapoint's Corporate Edition WebMail interface provides browser-based access that matches that offered by Microsoft's Outlook Web Access client.

In addition, Mirapoint integrates additional features like multi-layered anti-spam, anti-virus and content filtering



**Sponsor:** Mirapoint, Inc.

**Document number:** 206131

**Product class:** Enterprise message server appliance

**Products used:** test:

- Mirapoint Message Server M600 version 3.7.4.6-A

**Testing window:** March 2006

For more info on this test, visit: <http://www.tolly.com>

View the full report at:

<http://www.tolly.com/DocDetail.aspx?DocNumber=206131>

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Benchmarks

# Nortel Ethernet Routing Switch 5000 Series outclasses rivals in stack performance tests

Nortel commissioned The Tolly Group to evaluate the Layer 2 switching performance, resiliency and ease of use delivered by the company's stackable Ethernet Routing Switch 5000 series of switches.

The Nortel Ethernet Routing Switch 5000 series of stackable switches tested include 24- and 48-port versions of 5510, 5520 and 5530 models — single rack-unit stackable Gigabit Ethernet (GbE) Layer 3 routing switches designed to provide high-density GbE desktop connectivity to mid and large enterprise customers' wiring closets.

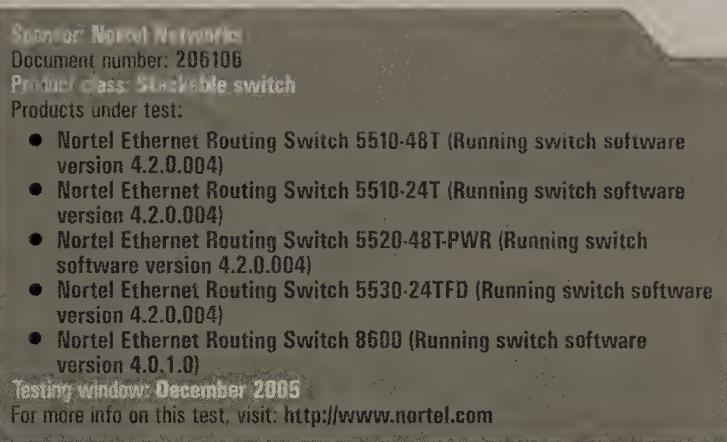
Engineers measured the performance and resiliency characteristics of the Ethernet Routing Switch 5000 series switches against Cisco Systems, Inc. Catalyst 3750G switches and Hewlett-Packard Co. ProCurve 3400Cl switches.

Layer 2 performance tests on the DUTs in an eight-switch stack revealed that the Nortel switches consistently outperformed the Cisco Catalyst 3750G and HP ProCurve 3400Cl switches while handling line-rate traffic of 64-, 512- and 1,518-byte frames across the 202 ports in the stack. Nortel's switch stack achieved frame forwarding rates in excess of 300 million frames per second (fps) for 64-byte frames versus 171 million fps for HP's ProCurve 3400Cl and just 38 million fps for Cisco's Catalyst 3750G.

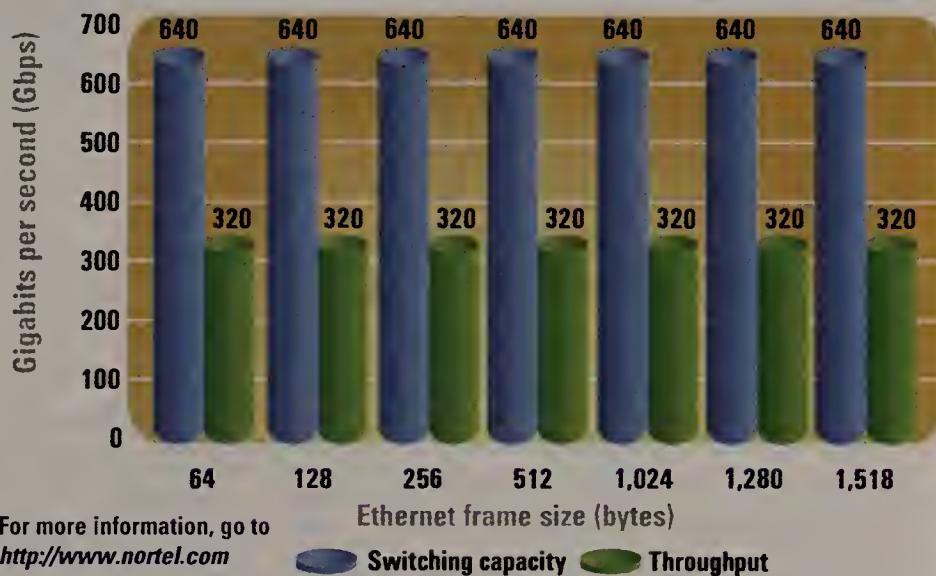
In standalone switch tests, results show that both Nortel and HP switches achieved 100% of the maximum theoretical throughput while handling Layer 2 test traffic consisting of 64-, 512- and 1,518-byte frames transmitted across 48 ports in a port-to-port configuration. Cisco could only

- Achieves line-rate performance of 202 Gbps frame-forwarding in an eight-unit stack, while Cisco and HP switches support only 25.7 Gbps and 114.7 Gbps respectively
- Recover from link and switch outages almost 10X faster using Nortel's SMLT implementation than the RSTP implementation in the Cisco Catalyst and HP ProCurve solutions tested
- Shows ease of use by requiring only 60 CLI commands in a four-switch SMLT scenario, while RSTP solutions tested require 156 and 102 commands, respectively

View the full report at:  
<http://www.tolly.com/DocDetail.aspx?DocNumber=206106>



Zero-loss ( $\leq 0.001\%$ ) Aggregate Layer 2 Throughput of Ethernet Routing Switch 5510-48T in an Eight-switch Stack Configuration (320 GbE ports) as Reported by SmartBits SmartFlow 4.60



For more information, go to  
<http://www.nortel.com>

achieve throughput of 55% of the theoretical maximum for 64-byte frames, 61% for 512-byte frames and 62% for 1,518-byte frames.

A probe of failover capabilities shows that Nortel's Ethernet Routing Switch 8600 and 5530 solution using SMLT demonstrated the fastest network failover time in the event of a link or switch failure. Nortel's solution using Split Multi-Link Trunking failed-over in 0.5 seconds while Cisco's solution took 1.7 seconds and HP's solution took 3.1 seconds.

Engineers also examined the relative ease of use of all devices tested. Nortel's test bed, consisting of two Ethernet Routing Switch 5530 access switches and two Ethernet Routing Switch 8600 core switches, required a total of 60 commands to configure SMLT. HP's test bed, consisting of two ProCurve 3400Cl access switches and two ProCurve 9300 core switches, needed 102 commands to configure RSTP. Cisco's test bed consisting of two Catalyst 3750G access switches and two Catalyst 6500 core switches needed 156 commands to configure RSTP.

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Benchmark

# Malicious software meets its match with the behavioral detection of Sana Security's Primary Response SafeConnect

Sana Security, Inc. commissioned The Tolly Group to evaluate its Primary Response SafeConnect, a software program designed for Windows-based operating systems (2000, XP) to detect and remove malicious programs.

Unlike traditional intrusion prevention systems, this product is designed to identify malware based on specific combinations of behaviors exhibited by the suspicious programs, such as writing to the registry, surviving reboots, executing from the Windows directory, double file extensions, and/or hidden processes.

Primary Response SafeConnect detected and removed 100% — all 4,280 — of the malware programs to which it was exposed. The test results conclusively demonstrate that the program successfully accomplished its main objective — identifying and removing programs showing signs of suspicious behavior, such as trojans, rootkits, spyware, adware and more.

#### Sponsor: Sana Security, Inc.

Document number: 206125

#### Product class:

- Intrusion Prevention System

#### Products under test:

- Primary Response SafeConnect SW Ver. 2.0.0.588

#### Testing window: March 2006

For more info on this test, visit:

- <http://www.sanasecurity.com>

- Detects 100% (4,280 out of 4,280) malware threats from infected URLs providing constant protection against malware
- Evaluates real-time behavior of programs to instantly determine if malware; does not rely on time-intensive signature scanning
- Eliminates need for costly and time-consuming patches and signature updates as new malware is introduced
- Captures and removes affected programs from computer, allowing users to quarantine or allow programs as necessary

Engineers also measured the CPU utilization and memory utilization of Primary Response SafeConnect during peak program usage. The total CPU utilization of the three program components was less than 5% of total CPU, indicating that Primary Response SafeConnect required a very low CPU usage level to function effectively. Of the 4.95% of the total CPU utilization, 0.016% was used by SafeConnect.exe, 4.93% was used by Agent.exe, and 0.003% was used by Monitor.exe.

Results were similar for measuring physical memory utilization required by Primary Response SafeConnect. SafeConnect.exe required 19.3 MB of memory, SanaAgent.exe required 30.6 MB and Monitor.exe required 0.9 MB for a total of 50.8 MB of physical memory required to operate the program. This equated to approximately 6% of the 768 MB of RAM installed on the machine during peak usage when malware was removed. Sana Security says memory utilization often is lower during normal day-to-day operations.



## Sana Security™

#### Sana Security Primary Response SafeConnect Features and Product Specifications\*

##### Features

- Comprehensive protection against many different attacks in a single solution
- Instant detection and removal of malicious software in real-time without scanning
- Constant protection that is always up-to-date without requiring signature updates
- Complete removal

##### Product Specifications

- Windows 2000, XP (Home and Pro), Media Center 2005
- Pentium III processor running a minimum of 600 MHz
- Memory: 256 MB of RAM
- Disk space: 50 MB
- Internet Explorer 5.5 or later

##### For more information contact:

Sana Security, Inc.  
2121 South El Camino Real, Suite 700  
San Mateo, CA  
Phone: (650) 292-7100  
Fax: (650) 292-7110  
URL: <http://www.sanasecurity.com>

\* Vendor-supplied information not verified by The Tolly Group

View the full report at:  
<http://www.tolly.com/DocDetail.aspx?DocNumber=206125>

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**Sponsor: BlueArc Corp.**  
**Document number: 206132**  
**Product class:**  
 • Network-attached storage solution  
**Products under test:**  
 • BlueArc Titan 2200  
**Testing window: April 2006**  
 For more info on this test, visit:  
 • <http://www.bluearc.com>

# BlueArc Titan 2200 network storage system excels at high performance

- Delivers average sustained throughput of 718 MB/sec from a single Titan when handling a mix of read/write I/O operations from 48 clients to disk
- Achieves sustained read throughput of 656 MB/sec to a single Titan, when handling read operations from 48 clients through to disk, not from cache
- Sustains write throughput of 450 MB/sec on average to a single Titan, when handling writes from 48 clients to disk
- For higher throughput, clustering is supported with global name space and will be tested in a separate report



BlueArc Corp. commissioned The Tolly Group to examine the performance of the company's Titan 2200, a network-attached storage (NAS) solution that the company claims is the fastest system on the market and also the most scalable, able to consolidate and manage up to 512 terabytes of data in a single storage pool.

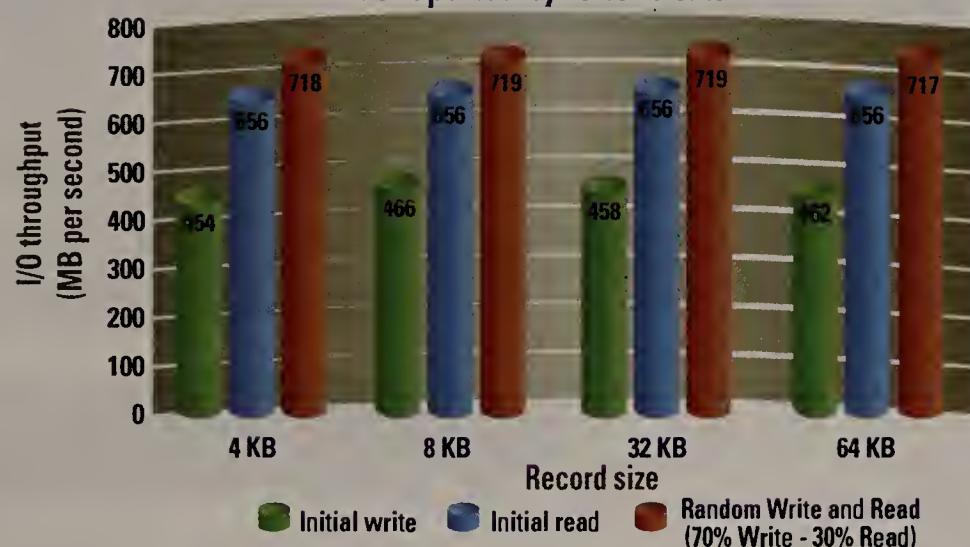
Tolly Group engineers focused tests on the average throughput of a single Titan 2200 node handling I/O requests between 48 client PCs. The back-end SAN storage was comprised of multiple Engenio 2882 storage systems, consolidated into a single virtual storage pool and name space. Throughput was measured for a variety of read, write and mixed read/write operations.

Tests show that a single Titan 2200 can deliver uniform performance even as NFS record sizes accessed by clients increase from 4K bytes to 64K bytes.

When handling random read/write operations, the Titan 2200 delivered an average of 718 MB/sec of sustained throughput to disk over the six bonded 1-Gbps Ethernet connections tested.

Tolly Group engineers looked at write operations and found that the Titan 2200 sustained throughput of 460 MB/sec on average. For read operations, the Titan 2200 delivered 656 MB/sec of average sustained throughput to disk.

**BlueArc Titan 2200 Single-Node Throughput Performance (MB per second) as reported by IOZone 3.257**



The BlueArc Titan architecture is massively parallel. It can do many things concurrently at wire speed. BlueArc explains that this is possible because the Titan 2200 employs 12 high-density field-programmable gate arrays (FPGAs) with up to 32 gigabytes of distributed memory, dual pipelines, hardware-based operating system, and file systems creating a high-performance parallel design. The Titan 2200 architecture is optimized for data movement and implementing advanced features at wire speed, according to the company.

Tests show that the Titan 2200 can support significant numbers of connections, meaning users can have a lot of application tiers contending for attention at the same time with no degradation in throughput or I/O. This performance profile makes it

ideal for high performance applications or consolidation of multiple network storage servers, into a faster centralized Titan solution. Titan can also be clustered for HA or additional throughput and can also handle high transactional loads per SPECfs results on [www.spec.org](http://www.spec.org).

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View the full Test Summary at:  
[http://www.tolly.com/DocDetail.aspx?  
 DocNumber=206132](http://www.tolly.com/DocDetail.aspx?DocNumber=206132)

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**TOLLY**  
 Benchmarks

# Nortel Secure Router 3120 demonstrates superior DS3/T1 throughput

- Secure Router 3120 demonstrates wire-speed performance while simultaneously supporting active Quality of Service (QoS), Access Control List (ACL) filters and Network Address Translation (NAT) services
- Delivers more than double the throughput of the Cisco 3825 and as much as four times the throughput of the Cisco 2821 when tested over a point-to-point DS3 link
- Outperforms Cisco 2821 routers, delivering more than 4X the throughput when tested across a group of eight point-to-point T1 connections

Wide-area network routers that aggregate traffic from many remote sites, especially across DS3 or multiple T1/E1 links, must be able to deliver high throughput, even with Quality of Service (QoS), Network Address Translation (NAT), and security services active and vying for processor cycles.

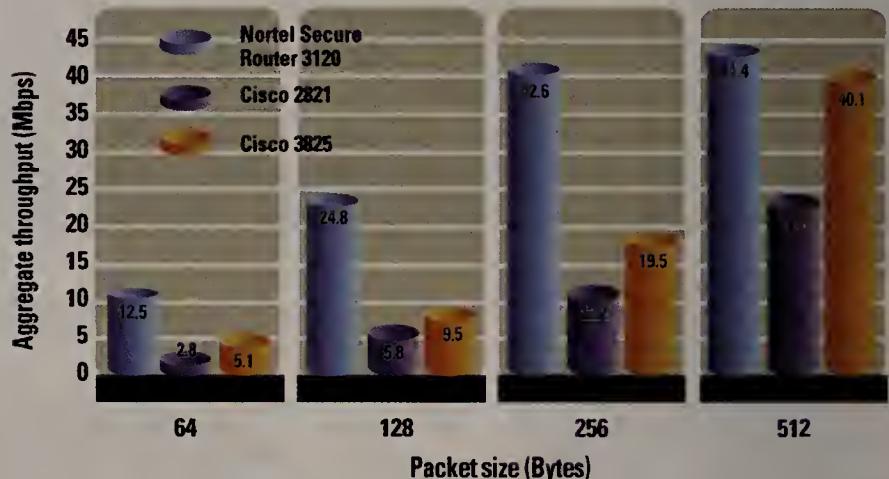
In a series of tests commissioned by Nortel, Tolly Group engineers measured the multilink Point-to-Point Protocol (PPP) zero-loss throughput of the modular Nortel Secure Router 3120 with QoS, NAT and Access Control List (ACL) features enabled.

Tests show that the Nortel Secure Router 3120 delivers superior throughput for the majority of packet sizes tested, especially with regards to smaller packet sizes (64 bytes to 256 bytes), generally delivering from 2X to 4X greater throughput than the Cisco Systems 3825 Integrated Services Router and 2821 Integrated Services Router tested.

When tested with a group of eight T1s, the Nortel Secure Router 3120 outperformed the Cisco 2821 routers, delivering more than 4X the throughput - 11.3 Mbps aggregate throughput for the Secure Router 3120 versus just 2.4 Mbps for the Cisco devices when tested at 64-byte frames.

Testing demonstrates that the Nortel Secure Router 3120 possesses an enormous

## Nortel Secure Router 3120 versus Cisco 2821/Cisco 3825 Full-Duplex, 1xDS3 PPP WAN Throughput Zero-Loss Performance with QoS/ACL/NAT Enabled



amount of processing headroom to accommodate network services while simultaneously offering wire-speed throughput.

In addition to delivering wire-speed packet processing, tests show that the Secure Router 3120 has the horsepower to simultaneously handle QoS, ACL and NAT processing. In head-to-head testing, the Secure Router 3120 demonstrates more than double the throughput of the Cisco 3825 and as much as four times the throughput of the Cisco 2821 over a DS3 link. In a multiple T1 scenario, the Secure Router 3120 achieves 4X more throughput than the Cisco 2821.



Sponsor: Nortel  
Document number: 205146  
Product class: WAN router  
Products under test:

- Nortel Secure Router 3120 OS Ver 9.0/BootROM Ver. T1002 09120
- Cisco Systems 3825 Integrated Services Router OS Ver. 12.4.2T1/BootROM Ver. 12.3(11r)T
- Cisco Systems 2821 Integrated Services Router OS Ver. 12.4.2T1/BootROM Ver. 12.3(8r)T

Testing window: September 2001

For more info on this test, visit: <http://www.nortel.com>

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View the full test summary at:  
<http://www.tolly.com/DocDetail.aspx?DocNumber=205146>

Special Advertising Section

**TOLLY**

Benchmarks

# Nortel Secure Routers dominate in branch office T1 connectivity tests

Nortel commissioned The Tolly Group to evaluate the Nortel Secure Router 1004 and Secure Router 1002 wide-area network routers with integrated network services such as Quality of Service (QoS), IPSec VPN with on-board hardware acceleration, stateful firewall, Network Address Translation (NAT) and Access Control Lists (ACLs) for enterprises and service providers.

Tolly Group engineers measured the multilink Point-to-Point Protocol (MLPPP) zero-loss throughput of the Secure Router 1004 against Cisco 2811 and Cisco 2821 routers, with QoS, NAT and ACL features enabled in a scenario with multilink PPP traffic riding over four T1s.

Tests show that the Secure Routers 1004/1002 can deliver wire-speed throughput at most pack-

et sizes tested, while simultaneously processing a combination of QoS, NAT, ACL filters, IPSec VPN and firewall services.

By contrast, tests show that the performance of the Cisco 1841/2811/2821 routers sag under the processing load, especially when smaller, more taxing packet sizes come into play.

Test results show that the Secure Routers 1004 and 1002 deliver superior throughput for the majority of packet sizes tested, especially with regards to smaller packet sizes (64 bytes to 256 bytes), delivering up to 6.4X greater throughput than the Cisco devices tested.

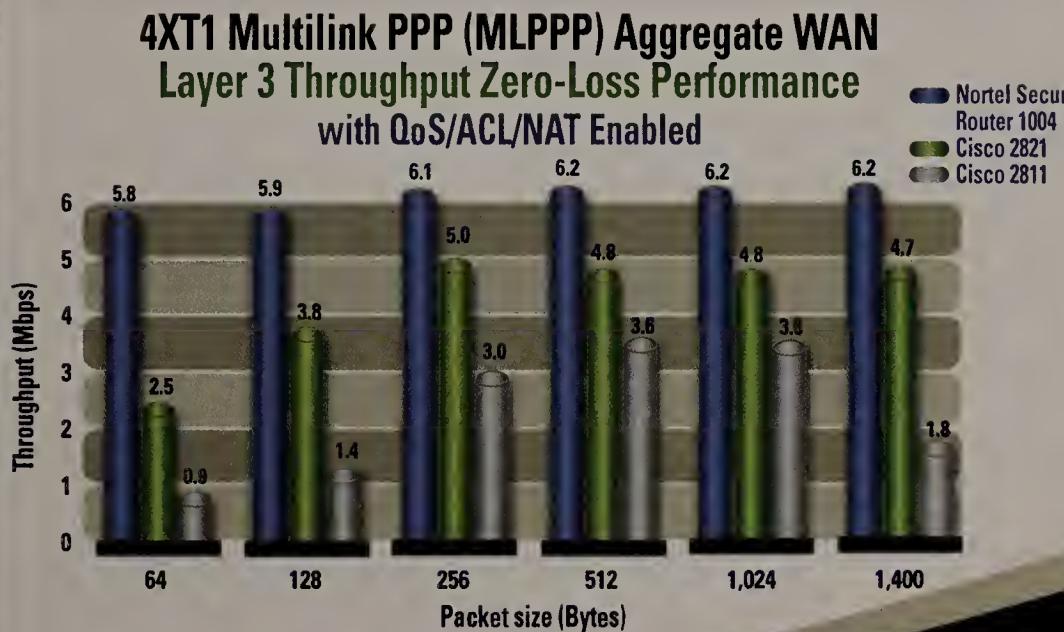
In a scenario with the WAN routers supporting multilink PPP traffic across four T1s, the Nortel Secure Router 1004 delivered zero-loss aggregate throughput ranging from 3.9 Mbps at 64-byte frames to 6.2 Mbps when tested at 512-byte frames with QoS/VPN and firewall services enabled. By contrast, the Cisco 2811 achieved throughput ranging from 1.1 Mbps to 4.1 Mbps.

In a scenario with WAN routers supporting multilink PPP traffic across two T1s, the Nortel Secure Router 1004 delivered 3.1 Mbps across the range of packet sizes tested. By contrast, the Cisco 2811 and Cisco 1841 routers tested achieved an average of 2 Mbps and 1.25 Mbps, respectively.

Sponsor: Nortel  
Document number: 205143  
Product class: WAN router  
Products under test:

- Nortel Secure Router 1004 OS Ver 8.2.1/ BootROM Ver. T1k031605
- Nortel Secure Router 1002 OS Ver 8.2.1/ BootROM Ver. T1k031605
- Cisco 1841 Integrated Services Router OS Ver. 12.4.2T1/ BootROM Ver. 12.3(8r)T8
- Cisco 2811 Integrated Services Router OS Ver. 12.4.2T1/ BootROM Ver. 12.3(8r)T7
- Cisco 2821 Integrated Services Router OS Ver. 12.4.2T1/ BootROM Ver. 12.3(8r)T7

Testing window: September 2005  
For more info on this test, visit: <http://www.nortel.com/>



For more info on this test, visit:  
<http://www.tolly.com/DocDetail.aspx?DocNumber=205143>

Special Advertising Section

**TOLLY**  
Benchmarks

# Tests reveal that Wiresoft Security Platform hits the mark for SMBs

- Blocks 100% of spam messages by employing an advanced challenge/response system to thwart automated messages
- Processes 3.6 Mbps of aggregate throughput while simultaneously scanning for viruses, worms, Trojans and other malicious traffic
- Yields 24 Mbps of aggregate throughput over a VPN connection between two locations while handling 1,400-byte packets
- Supports aggregate throughput of 171 Mbps while actively screening traffic in firewall mode
- Demonstrates resiliency to service outages by utilizing a failover port to cut over to backup DSL, cable or dial-up connections

A hands-on examination of Wiresoft Net, Inc.'s Sentry Security Platform shows that the bundled solution for small-to-medium businesses (SMBs) delivers on the promise of business continuity, increased productivity, self-maintaining reliability, and expandability in a single solution.

The dilemma that SMBs face today is that the IT market abounds with supplier after supplier that offer point solutions for security. Yet these are not practical solutions for SMBs since buyers must struggle to integrate point products into existing networks.

Sentry Security Platform bundles a variety of security services including transparent virus scanning, challenge response spam blocking, stateful packet firewalling, VPN services (PPTP and IPsec) and more.

Tolly Group tests show that Sentry Security Platform blocked 100% of the spam messages it encountered, and delivered 100% of the legitimate mail. The Tolly Group also tested Sentry Security Platform's ability to detect and stop a variety of common viruses at the network edge. Sentry Security Platform was able to sustain 3.6 Mbps of aggregate zero-loss throughput for five minutes in "steady state" with no unsuccessful HTTP transactions reported while simultaneously scanning for viruses.

Tests also verified that the Sentry Security Platform automatically updates its local list of virus definitions and response database every two hours. That means that in the likelihood of a sudden virus outbreak propagating through the Internet, Sentry Security Platform likely will have an updated anti-virus profile to defend against and repel the attack.

The Tolly Group also verified the Wiresoft solution's VPN capabilities, including Point-to-Point Tunneling Protocol (PPTP) and IPsec support for VPN connections. Among the VPN findings, tests show that Sentry Security Platform sustains up to 24 Mbps of zero-loss throughput across a single-tunnel configuration supporting IPsec and 1,400-byte packets. Further, firewall testing revealed that Sentry Security Platform delivers 171 Mbps of bidirectional aggregate throughput when handling 1,518-byte frames in firewall mode.

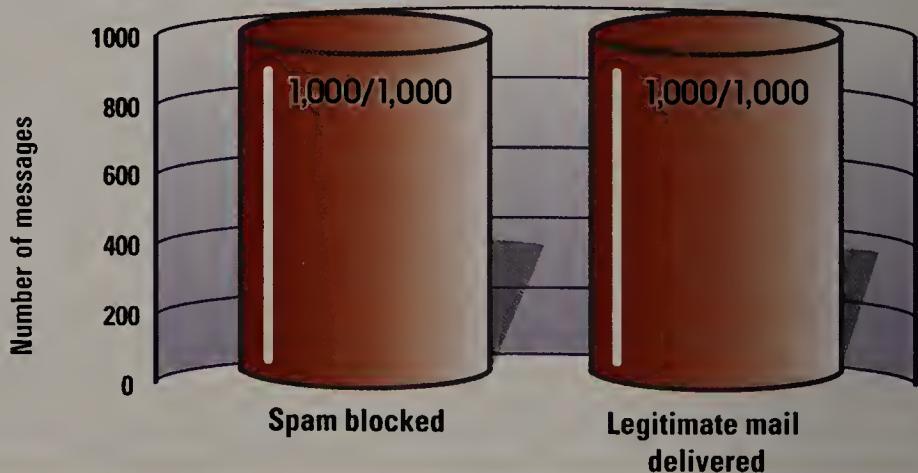
The hands-on evaluation also examined a number of important features, such as simplified setup, a monitored service offering to perform preven-



tative maintenance on other Sentry systems on the Internet, reliability factors, scalability and failover features.

The Sentry Security Platform's feature/function packaging for SMBs thoroughly impressed Tolly Group engineers.

## Effectiveness of Sentry Security Platform at Blocking Spam



Sponsor: Wiresoft Net, Inc.

Document number: 206113

Product class: Multifunction security suite

Products under test:

- Sentry Security Platform version 7.3

Testing window: February 2006

For more info on this test, visit:

- <http://www.wiresoft.net>



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View the full test summary at

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# NET INFRASTRUCTURE

■ SECURITY ■ SWITCHING ■ ROUTING ■ VPNS ■ BANDWIDTH MANAGEMENT ■ VOIP ■ WIRELESS LANs



## Sun's Perlman on future of network research

*Some people refer to Sun Labs' distinguished engineer Radia Perlman (see [www.nwdocfinder.com/3431](http://www.nwdocfinder.com/3431)) as the Mother of the Internet and the creator of the spanning tree algorithm used by bridges and switches. Others know her as the author of network textbooks such as Interconnections. Network World singled her out in March as one of 20 people who changed the industry over the past 20 years ([www.nwdocfinder.com/3432](http://www.nwdocfinder.com/3432)). Executive News Editor Bob Brown recently interviewed her and wanted to know: What have you done for us lately?*

**One week I get to see Tim Berners-Lee, the Father of the Web, and the next week I get to meet with the Mother of the Internet. What more could a networking editor ask for?**

Mother of the Internet. That's kind of a strange marketing sound bite. I cringe when people emphasize my gender, because it's really a very small part of my life, especially my professional life. Recently a recruiter for a company sent me e-mail saying: "We are particularly interested in you as a female thought leader." I didn't reply, because I wasn't interested in a job, but I fantasized replying: "Thank you for your interest. Although my credentials as a thought leader are impeccable, I must warn you that I am not that qualified as a female. I can't walk in heels, I have no clothing sense, and I'm not particularly decorative. What aspects of being female

are important for this position?"

### What's your take on the state of networking and security research these days?

The taste of whoever is in the funding agencies tends to cause everyone to look at the same stuff at the same time. Often technologies get hot, then go away. There was active networking for a while, which always mystified me and has now died. In security the money is behind digital rights management, which I think ultimately is a bad thing — not that we need to preserve the right to pirate music, but because the solutions are things that don't solve the real problems in terms of security. The few dishonest people will always manage to steal things. But most people are basically honest, and are willing to pay if you make it convenient. If there's a trust relationship there, most people will wind up buying things. I hate to see so much emphasis on digital rights management.

### Where should the funding go?

The things that seem absolutely unsolvable but that we have to solve is the user interface stuff. Everything is so complicated. People tell you to turn off cookies because they are dangerous, but you can't talk to anything on the Web without using them. People build this horribly complicated software, put up all these mysterious pop-up boxes and then blame the users when things don't go right. I keep hearing people say, like with distributed denial of service, that there are all these grandmothers out there who don't know how to maintain their systems. Don't

**See Sun, page 20**

## Short Takes

**SMC Networks** last week announced its TigerSwitch 1000 SMC8024L2, a 24-port 10/100/1000Mbps managed LAN switch aimed at small and midsize companies. The SMC8024L2, which can be managed via SNMP and includes a Web-based management interface, could be deployed as a workgroup switch for users or as a backbone device connecting small-business servers. The switch costs \$700, or about \$30 per triple-speed Ethernet port.

**Ranch Networks** says its latest box can load-balance and provide failover for the open source Asterisk IP PBX platform. The company's RN appliance sits in front of two Asterisk servers and monitors them, checking online status, measuring processor load and network availability. If one Asterisk box fails or becomes overloaded, the RN appliance shifts requests to the backup server. The RN boxes also provide bandwidth management, VPN termination, call accounting and LAN switching. The devices range from \$600 to \$17,300.

## Juniper reveals plans for WAN gear

BY TIM GREENE

Juniper has laid out an 18-month road map that includes improving the capabilities, capacity and management support of its WAN acceleration gear while offering custom acceleration for more individual applications.

Once carried out, the road map will bring Juniper's gear more in line with products from other vendors, notably Riverbed, which also makes devices that improve WAN response times through a variety of means, says Rob Whiteley, an analyst with Forrester Research.

Blue Coat, Cisco, Citrix, Expand Networks, F5 Networks, Packeteer and others also compete in this area, and are constantly adding features to develop a full set of application-visibility, acceleration and compression features, he says.

Juniper's WAN acceleration family includes the DX, WX and WCX devices. The DX is a one-end acceleration unit that sits in front of data centers and requires no special equipment at the other end of the

### Juniper faster WAN plan

Over the next 18 months, Juniper Networks plans to add features to its WX and DX WAN acceleration gear in an effort to meet increasing branch-office performance demands.

- **Accelerate SSL flows:** The WX will proxy SSL traffic, accelerate it and re-encrypt it as well as cache content in the flows to reduce WAN traffic.
- **Add Web caching:** The WX will be able to cache Web content, reducing traffic that must cross the WAN.
- **Enable data center rules in branches:** The WX will support a feature called AppRules that could reduce the number of requests crossing the WAN for customers that use both WXS and DXs.
- **PC software agent:** Client software that will enable a single PC to optimize traffic to a WX rather than the current WX-to-WX-only configuration.
- **Segmented management:** Administrators can be granted different management privileges over different devices in the network depending on their role.

connection. It terminates SSL sessions, performs HTTP compression and protects servers from denial-of-service attacks as well as SYN floods.

The WX appliances sit at both ends of corporate WAN links and through a variety

of compression and optimization techniques squeeze more data across the connections. Juniper plans to add Web caching, accelerating SSL-encrypted traffic and enforcing what were DX-based, data

**See Juniper, page 20**



Kevin Tolly

# NTP vs. RIM: A good deal for lawyers

from RIM a few months back. But now RIM must deal with another legal challenge from software provider Visto, which claims RIM's BlackBerry service violates four Visto patents. The lawsuit seeks unspecified damages and asks the court to shut down BlackBerry's service in the United States.

The residual impact on the IT world from these legal battles could last much longer.

That is where Microsoft comes in. The company's mobile messaging offering is based on and integrated into its flagship messaging hub Exchange Server 2003 solution, which competes with RIM's BlackBerry. Like other contenders, Microsoft hadn't had huge success prying RIM's fiercely loyal customers away from it. But the protracted patent

battle had an impact.

For once Microsoft wasn't the one being sued. With the real possibility of a U.S. judge ordering the BlackBerry service to be shut down, even many loyal customers started to make contingency plans. (RIM assured customers that it had developed an alternate, "non-infringing" version of its service, but at least some users were unwilling to bank on this.)

In Microsoft's case, the absence of a negative (a patent lawsuit) was a definite positive. Combine that with the fact that virtually every company has a collection of Exchange Server systems at its core, and it's easy to see why firms would want to understand how a mobile Exchange offering might be able to take over from the BlackBerry service.

Which brings us back to the lawyers. Faithful BlackBerry users did not ask for a change, but the action of the NTP lawyers served as a catalyst and, in effect, forced it upon them.

It would have been interesting (theoretically speaking) if the judge had shut down RIM and said "OK, NTP, it is all yours" because they had nothing but a piece of paper. There was no service that they could unleash to replace RIM. It wasn't a Netscape vs. Internet Explorer battle in which there were two viable alternatives.

While the RIM battle sparked discussion of patent reform, I believe a shutdown with nothing to replace it would have ensured that serious reform took place. And while we are at it, we might as well look at the final lawyer-

profit scorecard.

The Washington, D.C., law firm representing NTP scored about \$200 million from the deal, or a little less than \$3 million for each of the 67 partners. You might call them instant millionaires, but I have a feeling that many already were in that category.

NTP has about two dozen shareholders to split the remaining \$400 million, according to *The Wall Street Journal*. About half of them are — you guessed it — patent attorneys at a Beltway firm.

And the inventor? He died in 2004.

*Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Boca Raton, Fla. He can be reached at ktolly@tolly.com.*

## Juniper

continued from page 19

center-only rules at branch offices. It also plans to add a WX software agent that pushes compression algorithms to remote-access PCs.

WXC devices add data-sequence caching to the WX technology, making it possible to deliver large chunks of data from a local WXC cache rather than calling it from servers at the other end of a WAN connection. The WXC also will receive the WX improvements.

All the boxes are managed by WX CMS, software that monitors WAN performance by application and produces reports by site, device and link. CMS upgrades will make it possible to create new reports, such as how much the gear accelerates individual applications. It also will enable assigning specific management roles to specific individuals and limiting those roles to certain devices on the network. So a department administrator might have access to read performance reports and adjust settings for devices serving his department but not others. A corporate administrator could have overlapping access, plus access to all the other Juniper WAN acceleration gear in the corporate network.

These acceleration devices can pay for themselves rapidly, according to Robert Bell, director of IT for Dearborn, Mich., architectural and engineering firm Ghafari Companies, which has offices in Illinois and Indiana. He says installing three WXC boxes at these sites improved WAN performance enough to avoid having to upgrade T-1s to T-3s, which would have boosted monthly WAN costs five to eight times, depending on

the connection. Because of this, the Juniper devices installed last fall paid for themselves in eight months, he says.

One improvement on Juniper's road map that Bell looks forward to is a WX software agent that can be downloaded to an individual PC that enables it to compress traffic. The agent is pushed via a Juniper SSL VPN gateway, and Ghafari already has one. So a person using the VPN to access a file would download the WX agent at logon and get faster transactions because traffic would be compressed in both directions, he says. Competitor Orbital Data has this, and Riverbed and NetScaler are said to be working on it.

Bell says he also is looking forward to Juniper accelerating more individual types of applications as it already does with Common Internet File System and Exchange. In particular, a planned upgrade to accelerating SQL traffic will help speed up slow accounting transactions carried out between the Dearborn headquarters and the branch offices.

Tools to monitor traffic better and report on performance also will be welcome, he says. This will eliminate the need for separate performance monitoring and shaping gear, Forrester's Whiteley says. "You turn on its reporting and it reduces the need for having a box like Packeteer's sit on the WAN edge. It simplifies the architecture," he says.

Juniper's plans also call for making it possible to accelerate SSL between WX devices by compressing packets, then encrypting them with SSL before they cross the WAN. Previously, the devices could not open SSL traffic so could not determine whether it could be compressed or otherwise optimized. Blue Coat and Certeon

also do this, but they lack other features of Juniper gear, says Joel Conover, an analyst with Current Analysis.

Juniper promises to boost the speed of WAN links it can support to 155Mbps or OC-3. Other vendors such as Silver Peak offer

faster speeds than Juniper now has, Conover says, so this will bring the company back in line with competitors.

Overall, the Juniper road map foretells better integration of technologies it acquired over the past few years, Whiteley says. ■

## Sun

continued from page 19

blame the grandmothers; blame the vendors. Liability is one of those things I don't understand. Somebody makes a toy and some kid manages to stick a piece up his nose and dies from it, that company has to pay millions of dollars because everyone is so sympathetic. But in the software industry, when you install something there is this 9,000-page legalese that basically says: "We have no idea what this thing does, we're not claiming it does anything, if it remotely does anything useful you should be grateful to us, but you shouldn't blame us if it doesn't do what you expect." And they get away with it!

**What's this security project of yours called "ephemerizer" all about? (See [www.nwdocfinder.com/3433](http://www.nwdocfinder.com/3433).)**

You want to be able to create files that have expiration dates and make lots of copies of all of your storage, so even if your data center burns down you can buy a brand-new machine, reinstall the file system from scratch, get your backup tapes and be able to recover all the data that hasn't expired and not be able to recover any data that has expired. You want to be able to do this in a way that can be very scalable and in which you won't lose performance, and to do it with key managers that manage time-release keys in a way you don't really have to trust them.

We've been working on it for a few years, and it's been evolving. Originally the design was, every time you opened a file that had an expiration date you had to go to a key manager, like an external site, and ask him to unlock the file for you. When I tried to sell it to the file system groups they were unhappy about the overhead every time you opened a file, and the amount of information you'd have to keep in the header of the file was a whole bunch. After that I changed it so that only after a file system recovers from a crash does it have to ask for one decryption from an outside agent, and otherwise it works autonomously so it has no performance problems. In the header of a file all I need is about 4 bytes for a key ID. ■

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**More from the interview**

Head online for an unabridged version of the discussion with Radia Perlman.

[www.nwdocfinder.com/3434](http://www.nwdocfinder.com/3434)

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# ENTERPRISE COMPUTING

WINDOWS ■ LINUX ■ UNIX ■ SERVERS ■ STORAGE ■ GRID/UTILITY ■ MOBILE COMPUTING

## Microsoft taking storage to next level

Company moving beyond partnerships to offer its own complete packages for keeping data.

BY DENI CONNOR

Upon forming its Enterprise Storage Division four years ago, Microsoft had to overcome suspicion that it was about to encroach on yet another market. Instead, the company forged a reputation as a team player whose technologies boosted other vendors' products by enabling them to work better with Windows.

Signs are emerging, though, that changes are afoot. Not that Microsoft is about to toss its partners aside, but the company is taking steps to make more of a name for itself as a supplier of storage products.

"The next step of our storage strategy is working on complete solutions — a single way to manage servers and storage and content-addressable storage," says Claude Lorenson, group product manager of storage technologies.

Microsoft has begun rolling out stand-alone storage products, such as its System Center Data Protection Manager (DPM), software that backs up Windows file servers on a near-continuous basis. DPM competes with products from Revivio and Symantec but can be incorporated into products from Microsoft partners.

Microsoft is expected to expand DPM to also support Exchange and SQL Server systems, potentially giving the company more of an entry into enterprise storage accounts. To date, Microsoft has been strongest in the small and midsize business (SMB) sector, with a 53% share of the market for network-attached storage (NAS)

### Serious about storage

Microsoft has issued a steady stream of storage technologies in recent years.

Technology	Introduced	Function
Distributed File System Replication	2000	Lets multiple servers and shared directories on a network appear as a single network drive.
Windows Storage Server R2 (originally Server Appliance Kit)	2000	Software enabling the creation of Windows-based network-attached storage appliances.
Encrypting file system	2000	Encrypts files and folders on Microsoft Windows machines.
Storport driver	2003	Enables higher performance and better compatibility on Windows Fibre Channel storage-area networks (SAN).
Multipath I/O	2003	Enables duplicate paths between Windows servers and storage devices for load balancing and increased availability.
Virtual shadow copy services	2003	Creates point-in-time copies of data.
iSCSI software initiator	2003	Enables iSCSI on Windows host bus adapters.
Virtual disk service	2003	A set of APIs that provide a single interface for managing disks.
System Center Data Protection Manager	2005	Near-continuous data protection for Windows servers.
Simple SAN	2005	Simplifies Fibre Channel and iSCSI networking.
iSCSI-enabled software boot	2006	Creates iSCSI target storage devices.

devices priced from \$500 to \$100,000.

"When DPM supports Exchange and SQL Server and features such as bandwidth throttling and alternate pathing, DPM will clearly compete further up the stack with enterprise storage applications," says Mickey McIntire, CEO of String Bean Software, whose iSCSI-based WinTarget

software Microsoft acquired in March.

The company hopes its iSCSI products — the Microsoft iSCSI initiator, the Microsoft/IBM iSCSI software-enabled remote boot and its WinTarget software — will lead it into enterprise storage markets that want to blend Fibre Channel and iSCSI SANs.

"We are coupling iSCSI with some new functionality for Windows that will make it easier to manage blocks of data and the location of files, and compete with traditional NAS vendors' offerings," Lorenson says.

Microsoft also is plotting to make waves in storage management, though it has not released details.

"Many of our partners have told us that we are in a very good position to simplify server and storage management," Lorenson says, noting that Microsoft's first big announcement in this area will take place at the Storage Networking World conference in the fall.

Analysts are curious about how much of this technology Microsoft will embed in Windows.

"They could wipe out storage-management software for Windows vendors, not in that they offer end-user product but in that they offer software that can be productized and take value out of current vendor offerings," says Randy Kerns, an independent storage analyst.

### A history of partnerships

To date, Microsoft's storage offerings largely have been seen as complementary to others' products. For example, its low-to-midrange NAS technology — Windows Storage Server — has been adopted by such vendors as Iomega for use in appliances. Others have embraced such Microsoft storage technologies as Multipath I/O, the Storport driver and the company's Simple SAN technology, which aims to make Fibre Channel networking for Windows-based SANs easier for SMBs to use.

The company's Multipath I/O, which allows duplicate paths between Windows servers and storage devices for load balancing and increased availability, has been adopted by 3PAR, Egenera, EMC, HP LSI Logic, Network Appliance and Symantec.

The Storport driver, which allows higher performance and better Fibre Channel compatibility for Windows Server 2003 and future Windows operating systems, has been employed by Adaptec, Einulex and QLogic in their host bus adapters.

The company's Virtual Shadow Copy Services, which create point-in-time copies of data, has been incorporated by IBM, HP and CommVault into their backup software.

Finally, the company's Windows Storage Server Release 2, which was introduced as the Windows Server Appliance Kit in 2000, has enabled vendors to offer low-to-midrange NAS appliances that use Microsoft's underlying Windows Server 2003 operating system. Supporters include Dell, FalconStor, Fujitsu Siemens, Gateway, HP, IBM and Iomega.

It's difficult to say how much effort and resources Microsoft is putting into storage; the company won't disclose such information. It does not break out financial information for its storage division in its public reports. Based on the number of big-name partners it has in this market, Microsoft is a force to be reckoned with in storage. ■

## Short Takes

■ **Sepaton** has announced software for its S2100-ES2 virtual tape library appliance that eliminates the need to store unchanged or duplicated data within files. It says this speeds backup and lets data be stored at a much lower cost. The software is due by the end of June for less than \$1 per gigabyte.

■ **EMC** says it will acquire **Kashya**, a data-replication and -protection soft-

ware firm, for about \$153 million. The buy is part of EMC's effort to grow from a storage hardware provider to a one-stop shop for storing, managing, accessing and securing data. EMC plans to join Kashya's replication software with EMC's Invista network-based block storage virtualization technology. EMC will use Kashya's continuous data protection technology as the engine for EMC's RecoverPoint CDP software.

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# APPLICATION SERVICES

CRM ■ MESSAGING/COLLaborATION ■ WEB SERVICES ■ ERP ■ E-COM ■ NETWORK AND SYSTEMS MANAGEMENT

## Start-up targets Exchange customers

BY JOHN FONTANA

Messaging vendor PostPath emerged from stealth mode last week, saying it plans to ship a Linux-based replacement for Exchange that supports Linux network protocols and is designed to look just like Exchange on the network.

PostPath Server, expected to ship next month, is designed not only as a replacement for an entire Exchange environment but also as a piecemeal replacement for individual Exchange servers, such as those in branch offices.

PostPath Server is a replica of Exchange at the network level, so it looks like Exchange to other Exchange servers and to other software plugged into the server, such as Outlook, Active Directory and third-party applications including Research In Motion's BlackBerry mobile gateway. The company says its support of open standards will give users more options in third-party products, such as storage or

antimalware software, for messaging environments. PostPath Server also gives users alternatives for storage, backup and restore, archiving, and filtering. It ships with a Web client based on Asynchronous JavaScript + XML technology.

"The thing that seems to be most unique about this server seems to be its interoperability with Exchange," says Erica Driver, a Forrester Research analyst. "There are plenty of other Exchange alternatives out there, but I have not heard anyone else describe theirs as 100% interoperable."

PostPath Server will compete with servers from CommuniGate, Gordano, IPSwitch, Mirapoint, Rockliffe, Scalix and Sendmail.

However, Driver says the proof will be in customer deployments once PostPath Server is generally available. "If they can work as well with SharePoint 2007 as Microsoft does, that will be very interesting. But it remains to be seen."

Others are skeptical the server is a full

### Profile: PostPath (formerly AppTran)

**Location:** Mountain View, Calif.

**Product:** PostPath Server; a Linux-based messaging server designed to look and function just like Microsoft Exchange Server and its add-ons, including Active Directory, Outlook and mobile gateways.

**Funding:** WorldView Technology Partners, Series A (undisclosed amount); Matrix Partners, Series B (undisclosed amount)

**Executives:** Duncan Greatwood, CEO; previously with Virata/Globespan, Virata/Conexant and Madge Networks. Kerry Champion, VP of engineering; previously founder/CTO of Westbridge Technology, VP of Tumbleweed Communications. Scott Young, VP of marketing; previously CEO of UserLand Software, SVP of Vicinity Corp.

Exchange replacement, which has been attempted by IBM, Novell, Oracle, Sun and others. "There are a dozen vendors out there that claim to do a great job of supporting native functionality from Outlook, and basically none of them do," says Matt Cain, a Gartner analyst. "I have yet to see a broad enterprise deployment of Outlook

running in rich protocol e-mail mode against any back end other than Exchange."

PostPath created its server by decoding the packet-level protocols used by Exchange and coupling that knowledge with the protocols' publicly available documentation. The results were implemented on a

See PostPath, page 28

## Short Takes

■ **Microsoft** last week offered customers new test versions of two beta software products: **Microsoft Speech Server 2007** and **Windows CE 6**, which are expected to be available later this year. Companies use Speech Server to build interactive voice-response and voice-recognition applications. Windows CE is a stripped-down version of Windows for such products as set-top boxes. For more information about the Speech Server 2007 beta, see [www.nwdocfinder.com/3440](http://www.nwdocfinder.com/3440). For Windows CE 6, see [www.nwdocfinder.com/3441](http://www.nwdocfinder.com/3441).

■ **MetalInfo** recently announced **Meta IP Version 5.7**, an upgrade to its IP address, DNS and DHCP management package. Meta IP can now manage Berkeley Internet Name Domain (BIND) 9 and BIND 8 servers concurrently, for those companies moving to the most recent version of BIND. Pricing for Meta IP 5.7 starts at about \$5,000.

## EMC, Opsware tackle application maps

BY DENISE DUBIE

Network and systems management vendors continue to round out their product lines with tools to help customers better understand how application components use IT resources.

EMC Smarts last week showcased a new product the company says can help customers more quickly and accurately get a map of applications, servers and the connections among them. Application Discovery Manager (ADM), based on technology licensed from nLayers, gives customers an inventory of their data centers' applications and hosts and shows them how the elements are interdependent.

The company says the software-loaded appliance — which is installed in a data center near a core switch to watch traffic traverse the network — at first passively discovers network elements to get an accurate inventory. If a problem occurs or performance degrades, customers switch the appliance into active mode to collect more in-depth data about packets traversing the network between application components.

Although the product solves a problem in the near term — collecting accurate topology and configuration information about

the application infrastructure — EMC Smarts can use this technology as a building block for other, higher-level management tasks, says Jasmine Noel, a principal analyst with Ptak, Noel & Associates.

"ADM provides another step forward on EMC Smarts' path to managing dynamic virtualized environments. [The company] is correctly positioning the application discovery technology as an enabler to other management functions," she says.

ADM is priced at \$200,000 for the software and \$15,000 per appliance.

Separately, Opsware last week introduced a software application that tracks applications across heterogeneous networks. Opsware Visual Application Manager (VAM) discovers application components, including network devices, servers, software and business applications, and creates maps of dependencies.

Installed on a server, the software uses distributed agents to collect data from managed nodes.

EMC Smarts' and Opsware's products compete with Appilog (acquired by Mercury), Cendura, Collation (acquired by IBM), nLayers, Relicore (acquired by Symantec) and Tideway Systems.

According to industry watchers, application-mapping technology has reached a point where it can no longer be deployed as a point product but must be integrated into larger configuration and other management systems. By moving away from its OEM deal with nLayers and developing software in-house, Opsware will help customers roll out application-discovery technology without committing to a major integration project.

"Opsware provides integration mechanisms and APIs which may become an important point in product selection," says Jean-Pierre Garbani, a vice president at Forrester Research.

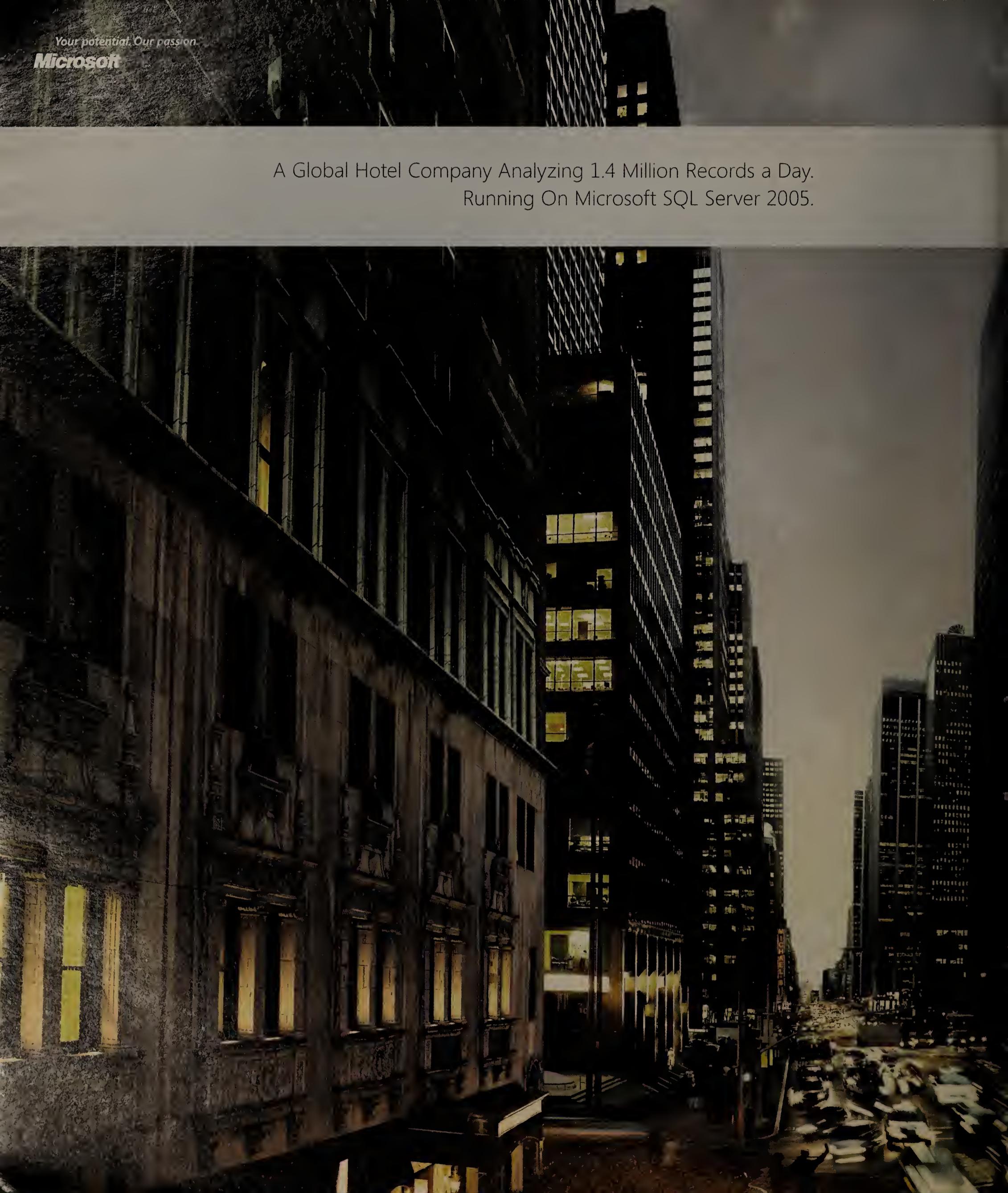
The software integrates with other Opsware products, including Network Automation System 6.0 (announced at Interop) and Server Automation System, to help IT managers track changes actively and take automated action based on preset policies.

Scheduled to be available in July, VAM is priced \$100,000 for 1,000 nodes. ■

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Microsoft  
**SQL Server** 2005





NET INSIDER

Scott Bradner

On May 2, six years to the day after Microsoft filed its application, the U.S. Patent and Trademark Office granted the company patent No. 7,039,699, "Tracking usage behavior in computer systems." Some wags dubbed the technology "super cookie." They call it that even though Microsoft limited the patent in some specific ways (probably to persuade the patent office to grant it). It flies in the face of IETF guidance on valid cookie use and provides information that is generally redundant with what Web companies can do already.

At first read, the patent (plug the number above into [www.nwdocfinder.com/3427](http://www.nwdocfinder.com/3427)) does not offer much that's new, even if you take into account the 2000 filing date. You would learn much of what the patent describes in a Cookies 101 class. Most of its concepts also are described in "HTTP State Management Mechanism," RFC 2109, from February 1997 ([www.nwdocfinder.com/3428](http://www.nwdocfinder.com/3428)) and its update, RFC 2965, from October 2000 ([www.nwdocfinder.com/3429](http://www.nwdocfinder.com/3429)). (I'm not sure why these RFCs are not referenced by the Microsoft patent; they are clearly relevant, and Microsoft does know about the IETF and RFCs.) To issue the patent, the USPTO had to have concluded the technology was new and unobvious to a person skilled in the art of cookies in May 2000.

There is one puzzling restriction in the patent's claims that might hold a clue as to why the USPTO reached that conclusion (it would

take a careful reading of the patent office's file history to be sure). For example, the patent's first claim is limited to the case in which there is a "first computer system having a first domain name and at least one other computer system having a second domain name that is different from said first domain name and wherein at least a portion of the first and second domain names are identical." The other main claims have similar restrictions. Note the first claim does not say what part has to be identical; maybe it could be ".com," in which case this would not be that much of a restriction.

The patent talks about all the many things that could be done with information from cookies, including targeted advertising, special display formats, special offers, unique services and creating a "psychographic profile" of the user. Just what I was missing

— Microsoft creating a psychographic profile of me when I visit its Web site to get a patch for Word. The body of the patent talks about creating a "domain-level cookie" for MSN's Web site that could be used by every MSN online service to record or find out what a user did on other MSN sites. The patent says, "Reading from the domain cookie would be equivalent to checking what the user did elsewhere on MSN.com."

I can see how it would be useful for an MSN online travel service to know I just bought an expensive camera from an MSN online camera store so the travel site could point me to expensive resorts rather than Motel 6. But a use like this violates the spirit, if not the letter of RFC 2964, "Use of HTTP State Management" ([www.nwdocfinder.com/3430](http://www.nwdocfinder.com/3430)), the IETF's statement of best practices for the use of cookies.

In the end, I don't think this patent amounts to much, because I expect MSN's online sites are exchanging far more information already about their users than their users expect and are doing so without using the technology in this patent. I expect Microsoft is not alone in doing this, which is why I have set Firefox to wipe out all cookies, other than a select few, every time I exit the browser.

**Disclaimer:** Harvard, like other universities, is subject to federal rules about sharing student information. Too bad there are not similar federal rules for nonstudents. But the university has no opinion about this patent: The above is just my own 2 cents' worth.

*Bradner is a consultant with Harvard University's University Information Systems. He can be reached at [sob@sobco.com](mailto:sob@sobco.com).*

## Workshare appliance aims to expose leaks

Device gives companies a glimpse of ongoing privacy, intellectual property and financial disclosure violations.

BY ANN BEDNARZ

Workshare this week is expected to announce a tool to help users get a handle on how much confidential and sensitive information is distributed inappropriately outside company boundaries.

The company's Trace Enterprise Network is a risk-assessment appliance that sits at the edge of the network and monitors outbound e-mail and Web traffic. It's preconfigured with basic content-security policies for protecting customer, financial and intellectual property information. Companies customize the policies to match corporate content security concerns.

Trace Enterprise Network is designed for short-term deployments. In conjunction with a Workshare professional services engagement, companies install the device for as long as two weeks to find vulnerabilities, such as hidden metadata, sensitive customer or financial information and profanity or discriminatory language, in outgoing messages and documents.

The appliance is the network complement to Workshare's Trace Enterprise Client, which analyzes historical content

sent out from and received by users' PCs.

Together, the products bring attention to hidden information, such as metadata or comments embedded in documents, and visible content that shouldn't be distributed according to business or regulatory policies, says Ken Rutsky, executive vice president of Workshare. A common gaffe the products find is employee comments accidentally retained in the notes of a sales proposal, Rutsky says.

"People understand that when they have 10,000 employees posting blogs, sending e-mails and doing all sorts of electronic communications, there is

risk. But they don't understand the extent of the risk," he says.

Scores of companies have come under the spotlight when sensitive internal information is leaked. In March, Google unintentionally disclosed certain financial projections when slides from an online presentation contained speaker notes Google didn't intend analysts to see.

With the risk assessment products, Workshare offers tools to prevent disclosures gaffes. Its Protect Enterprise Suite includes

network and client products to alert users to risky content, block sensitive information leaving networks, and cleanse confidential content before it gets distributed.

Competitor SRS Technologies offers Document Detective, client software designed to find and strip hidden data

and metadata including tracked changes, comments, embedded objects and object fragments. The vendor is working on a server-based version of the software.

Trace Enterprise Network is available as part of Workshare's risk assessment services. Pricing for the services starts at \$5,000. ■

### Accidental exposure

According to Ponemon Institute, in

75%  
of reported data security  
breaches, the most common  
cause is unintentional  
user error.

### PostPath

continued from page 25

Linux server that does not require plug-ins to interoperate on the Exchange network. In addition, native Active Directory tools, such as those used for creating users or moving mailboxes, also work with PostPath Server.

PostPath is offering alternatives to other functions within Exchange, such as a data store based on a file system rather than Exchange's Jet database.

In the file system, user objects have a folder containing subfolders for calendar, in-box and other features. Each message in a subfolder is represented by a single file. The structure allows live and incremental backup using any file server backup tool. Restoration is simplified in that users drag and drop folders, subfolders or even single messages to restore data.

"Our data store leverages modern file-system and modern disk technology so

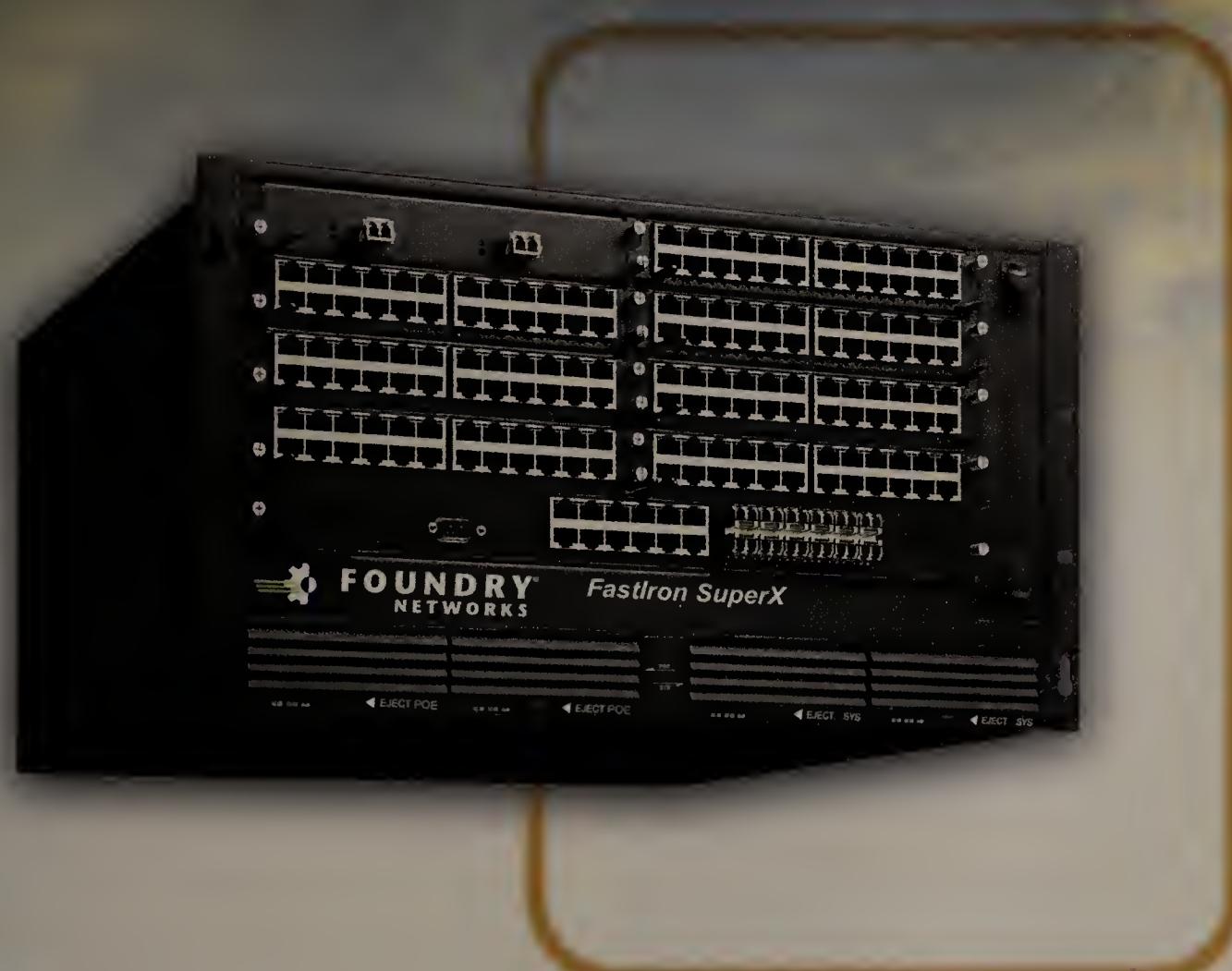
you can spend a lot less money on backup and restore software," says Kerry Champion, vice president of technology for PostPath.

PostPath Server supports commodity, direct-access, network-attached or storage-area network storage, and uses a standard, Unix-type Message Transfer Agent (MTA) to provide a broader choice of archiving and filtering software than is supported by the native Exchange MTA.

PostPath Server runs the Microsoft LoadSim tool, which simulates Outlook clients hitting the server. Users run the tool to test PostPath's performance against that of Exchange. The company claims a 10-fold performance boost over Exchange running on the same hardware.

Pricing has not been set but will include a charge for the server and a per-seat charge. There will be no mailbox charge or client access licensing for devices connecting to Outlook or the server itself. ■

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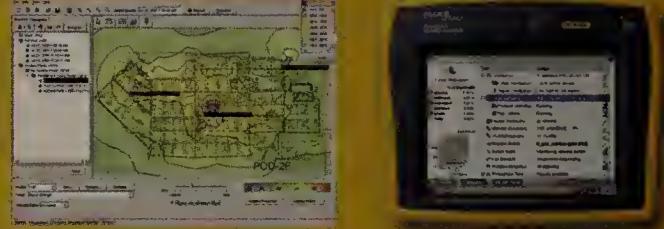
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**FLUKE**  
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# SERVICE PROVIDERS

■ THE INTERNET ■ VPNS ■ INTEREXCHANGES AND LOCAL CARRIERS ■ WIRELESS ■ REGULATORY AFFAIRS ■ CARRIER INFRASTRUCTURE



## NeuStar CEO touts DNS, VoIP plans

*NeuStar, the provider of telephone and Internet directory services to the telecom industry, is on a roll. In February, the Sterling, Va., company reported eye-popping financials for 2005, with revenue up 47% and net income up 22%. In April, NeuStar purchased UltraDNS, which offers managed DNS services to leading Web sites, such as Amazon.com and Match.com. Meanwhile, NeuStar is developing a service designed to ease VoIP integration issues for carriers.*

*Network World Senior Editor Carolyn Duffy Marsan recently interviewed Jeff Ganek, chairman and CEO of NeuStar, about these developments. Here are excerpts from their conversation.*

### How does UltraDNS fit in NeuStar's strategy?

It turns out that our products are very similar. All networks in North America depend on NeuStar for routing voice calls. Internet and IP networks depend on

UltraDNS for routing DNS messages. We do the same things: We are both trusted clearinghouses of directory services for all networks.

### What are your plans for UltraDNS' technology and staff?

All of the senior management are staying. NeuStar's reason for buying UltraDNS is that it is a very strong organization. They have great technology and operations. They run their systems in a highly reliable fashion 24 by 7, and they have a sales organization that's producing great growth. We fully intend to keep all the employees. And we expect to expand the operation. We think they can exceed beyond what they are already achieving.

### What plans do you have for new services from UltraDNS?

UltraDNS expands NeuStar's capabilities in DNS and IP. Together, NeuStar and UltraDNS are the routing directories for more than 25 top-level domains, including .org, .biz, .us and .mobi. Together, I expect we will be as essential to IP traffic as NeuStar is to all-voice traffic in North America. We already have products that

See Ganek, page 33

## Short Takes

**MegaPath Networks** and **Netifice Communications** said last week that they have completed the merger of their companies announced in February. The joined companies have more than \$125 million in revenue. Both offer managed VPN and other IP services to business users around the world. Netifice customers include The Leather Factory, MortgageIT and Thomson Prometic. MegaPath's customers include Jenny Craig, Radio Shack and insurance company UnumProvident. The merged company will use the MegaPath name. Craig Young, chairman and CEO at Netifice, will serve as CEO. MegaPath's former CEO Brian Service left the company.

**BellSouth** last week announced a guarantee for business broadband service installation. The carrier now offers an installation guarantee of five days instead of 15 for customers of its BellSouth FastAccess Business DSL service. BellSouth says it also offers a credit guarantee equivalent to three days of monthly recurring charges. BellSouth says it has more than 345,000 small-business customers for its FastAccess Business DSL service.

### EYE ON THE CARRIER Johna Till Johnson



The Greeks can take credit for plenty of firsts, starting with modern civilization, democracy, mathematics and philosophy. Here's another they might not be in such a hurry to claim: the first known example of illegal wiretapping of phone calls using legally installed software.

No, I'm not making this up. I even predicted it: A few weeks back I wrote a column highlighting the dangers of government-mandated built-in wiretapping (see [www.nwdocfinder.com/3435](http://www.nwdocfinder.com/3435)). As I wrote then, "Building networks that are inherently 'tapable' seems to me to be fundamentally bad security design, because anything the good guys can do, the bad guys can do, too."

It seems they already have. Earlier this year, news broke that unnamed bad guys had been wiretapping the Vodafone cellular network in Greece from just before the Athens Olympics in August 2004 until March 2005. Targets reportedly included Greek Premier Costas Caramanlis, the mayor of Athens and senior state security officials — along with senior military

## Wiretapping gone awry

officers, human rights activists, journalists, Arab businessmen and the United States Embassy. The leak was ultimately traced to software installed in the switches to enable the lawful intercept of traffic, which had been hijacked by rogue programmers.

That's right: Ericsson put wiretapping software in its switches to comply with legal requirements — and the bad guys used it in decidedly illegal ways. What a surprise.

As you might expect, plenty of finger-pointing has ensued. Vodafone blames Ericsson, saying it had no idea the switches contained wiretapping software — a claim adamantly denied by Ericsson's Greek CEO, Bill Zikou, who maintains that Ericsson provided all relevant details about the switches' capabilities to Vodafone management and says the responsibility to protect subscribers was with Vodafone.

And everybody blames the Greek government for failing to expose and remediate the situation in a timely fashion. As a journalist pointed out during a briefing by the Greek government earlier this year (well over a year after the event): "It isn't the government that made it public — it was the CEO of Vodafone." (For a partial transcript of this briefing and other informative details,

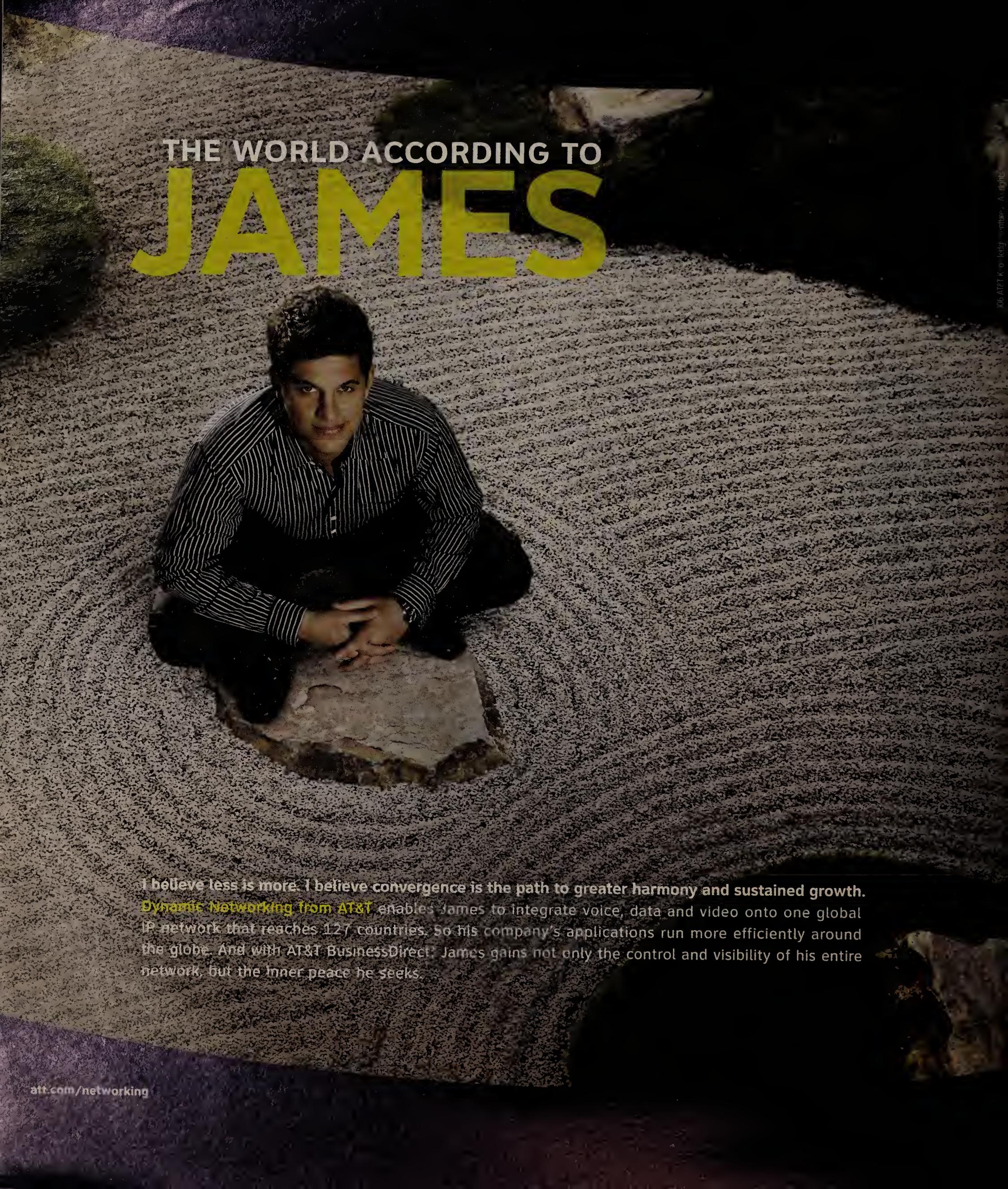
check out [www.nwdocfinder.com/3436](http://www.nwdocfinder.com/3436).)

Disturbingly, nobody seems quite sure of the culprits' identities, let alone their motives (though the selection of targets seems to clearly imply political aims). In one of the funnier moments during the whole episode, the Greek government initially denied the possibility the culprits could be Greek, on the theory that Greek geeks lack the technical knowledge necessary to pull off such a sophisticated hack — surely news to the many world-class computer scientists and engineers who hail from Hellas.

So here's the thing: As I noted previously, law enforcement agents need the tools to do their jobs. But building "tapability" into networks isn't the way to make that happen. Whether you're more concerned about unauthorized government intrusion or attacks by criminally minded geeks (and history suggests you should fear both), embedding tapability into the network is a bad idea.

Too bad we've codified this particular bad idea into our law.

Johnson is president and senior founding partner at Nemertes Research, an independent technology research firm. She can be reached at [johna@nemertes.com](mailto:johna@nemertes.com).



# THE WORLD ACCORDING TO **JAMES**

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**Ganek**

continued from page 31

NeuStar has announced that are complemented by UltraDNS offerings. One great example is SIP-IX. NeuStar announced SIP-IX in the fourth quarter of last year. SIP-IX is a standard that has been accepted by all the players in the industry as essentially the signaling and administrative function for VoIP, and we think it is a groundbreaking offering. The existing UltraDNS infrastructure — their global DNS network — is a strong platform for the distribution and accessibility of SIP services.

**What is the status of SIP-IX in the United States?**

SIP is going to be to the Internet what Signaling System 7 [SS7] has been to the voice world. We've been the lead proponent of SIP-IX, and we've been participating at the IETF in its definition. We've created a platform that provides a broad range of SIP functions, and we signed exclusive agreements with Internet exchange points around the globe to exclusively put NeuStar's SIP-IX platform in their data centers to make SIP functionality available by the transaction to any and all networks that converge at those network exchange points. Internet exchange points that handle more than 70% of the world's Internet traffic have signed on to NeuStar's SIP-IX platform.

**What will SIP-IX mean to enterprises?**

Large enterprises have very complex IP links all around the world provided by different ISPs. The SIP-IX platform, because it is positioned in the Internet exchange points, is accessible to all the ISPs. So every enterprise, whether they own their own transport facilities and connect directly to the ISP or whether they use a network provider, can get compatible, worldwide end-to-end SIP functionality across their own transport facilities and across those of all the ISPs within their corporate enterprise networks.

**When will SIP-IX be commercially available in the United States?**

It's on a trial basis. It'll be operational before the end of June.

**What is the status of NeuStar's work in ENUM (an emerging standard that translates telephone numbers into corresponding Internet addresses)?**

NeuStar has an ENUM capability up and operating today. It's going to be a feature on the SIP-IX platform, so it's easily accessible to all enterprises, all carriers and all ISPs. Frankly, we're just waiting for the market to catch up with the technology and the product that's available today.

**How does the UltraDNS acquisition position NeuStar against VeriSign?**

We rarely compete against VeriSign. VeriSign is a large customer of ours. They

bought Illuminet, a large SS7 provider, and NeuStar's local number portability is the killer application of the SS7 network. VeriSign doesn't do any of the telephone number directory work that we do. In the DNS space, they do .com and .net. We do different domains, but we don't compete with each other. We have similar operations, but our DNS directory is four or five times larger than VeriSign's.

**Does NeuStar have any other acquisitions planned?**

The market's need for directory services is growing very quickly, and to the extent that market needs require it, we intend to expand the clearinghouse services that we provide. Mergers and acquisitions are a great way to do that.

**NeuStar acquired Foretec in December and took over the secretariat function for the IETF. How is that going?**

We think it is going very, very well. That's the feedback we get from the IETF. NeuStar is all about open standards. We are all about the work that happens at the IETF to establish the technical foundation that allows for interoperability. The IETF needed help in doing the secretariat work — the administrative work of the regular IETF meetings and the background paperwork — and NeuStar is happy to step up and do that, because it's another dimension of how we are dedicated to operating as a neutral third party between rivalrous network providers. Foretec is a small business. It's not an entity that is going to provide material growth or profits. But it is a critical function that the industry needs, and NeuStar is doing it in that light.

**How do you explain NeuStar's financial success given the overall weakness in the U.S. telecom industry?**

It turns out that networks are using [our product] for more purposes than any of them had anticipated. Despite the fact that we have lowered our prices several times, volumes of their usage have continued to exceed NeuStar's projections. What was originally a local-number portability directory put in place so end users could keep their telephone numbers when they moved is now a dynamic call-routing system that network operators use to manage the architectures of their networks. So every time there is a change in the technology of the network — such as going from the old voice to the new IP technology — every time there's a larger merger and acquisition among the telcos, every time there's a change in the architecture of the menu of end user services that the carriers are offering, the carriers rely on NeuStar to reconfigure their networks. All of that drives very high volumes. ■

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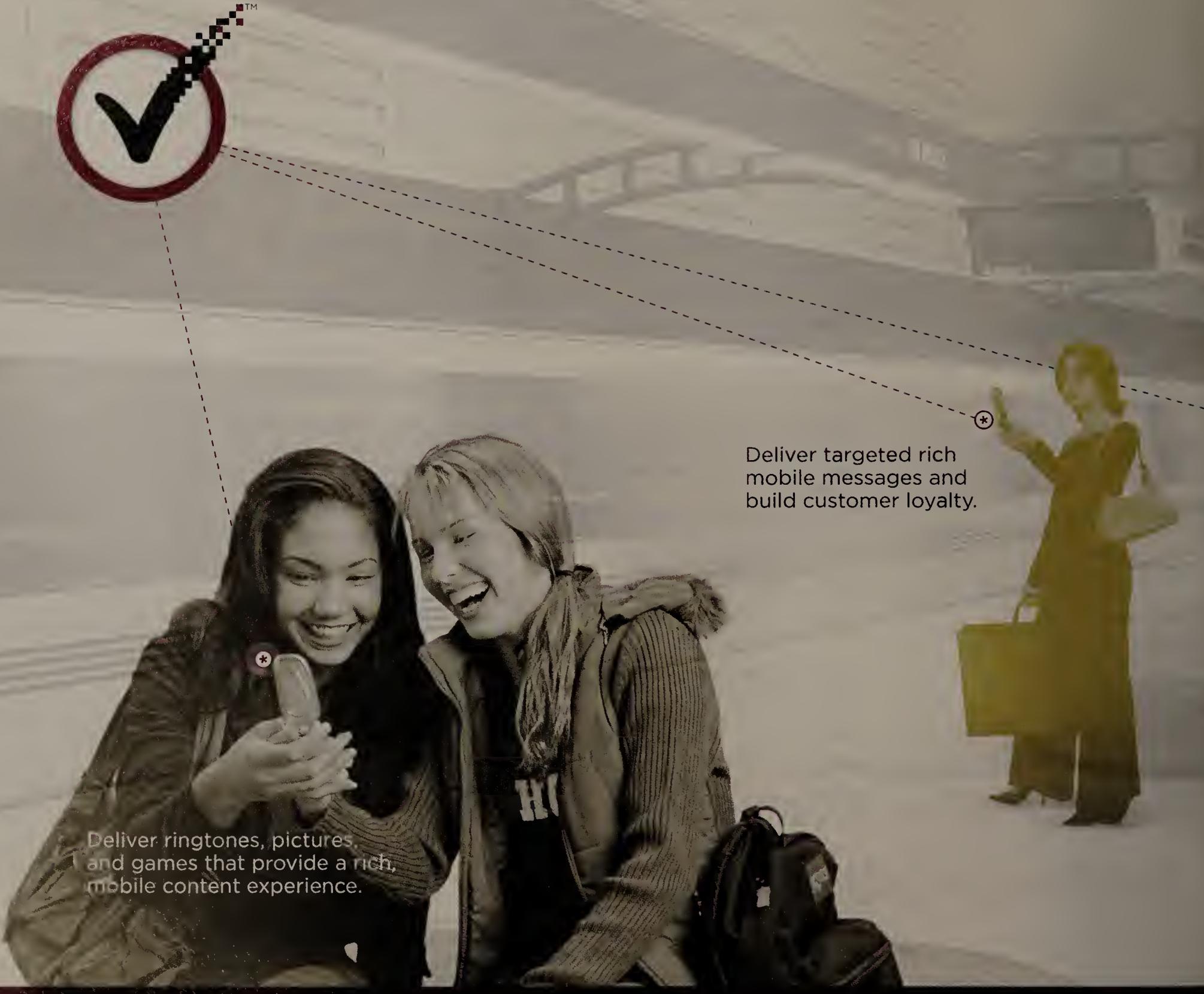
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A black and white photograph of a man in a dark suit and tie, looking upwards and slightly to his right with a thoughtful expression. He is holding a smartphone in his right hand, which is positioned towards the bottom right of the frame. The background is a blurred interior space, possibly an office or a lobby, with a sign that includes the word "EXIT". A dashed line with an arrow points from the text in the upper right corner down towards the man's hand.

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# SPECIAL FOCUS

## EDGE ROUTERS

# Edge router market invites more players

BY JIM DUFFY

**T**hree trends are driving the edge router market: IP TV, carrier Ethernet and multiservice networking.

These are also the reasons that the edge router market is expected to grow 21% this year to just less than \$3.2 billion, the same rate of growth for 2005, according to the Dell'Oro Group.

Edge routing is crucial in IP TV for Ethernet and broadband aggregation, and IP services delivery. Ethernet and broadband aggregation routers collect thousands of Ethernet and DSL access feeds from subscribers for connection to IPTV content.

### IP service edge routers

personalize those connections by identifying the subscriber and implementing video subscription policies and preferences to the user/content interaction.

"Video is such a big bandwidth sucker that it's really forced [carriers] out of a mind-set of incremental change to their networks, to network transformation in the aggregation and transport areas," says Mark Seery, vice president of IP service infrastructure research at RHK/Ovum.

This is where Alcatel has made the most inroads in edge routing. AT&T chose Alcatel as a supplier and integrator for the carrier's Project Lightspeed fiber-to-the-node buildout, which will support IP TV and other broadband applications.

Alcatel's share of the IP aggregation segment in edge routing rose from 9.2% in the second quarter of 2005 to 25.6% in the fourth quarter, according to Synergy Research, caused largely by Project Lightspeed and other IPTV buildouts.

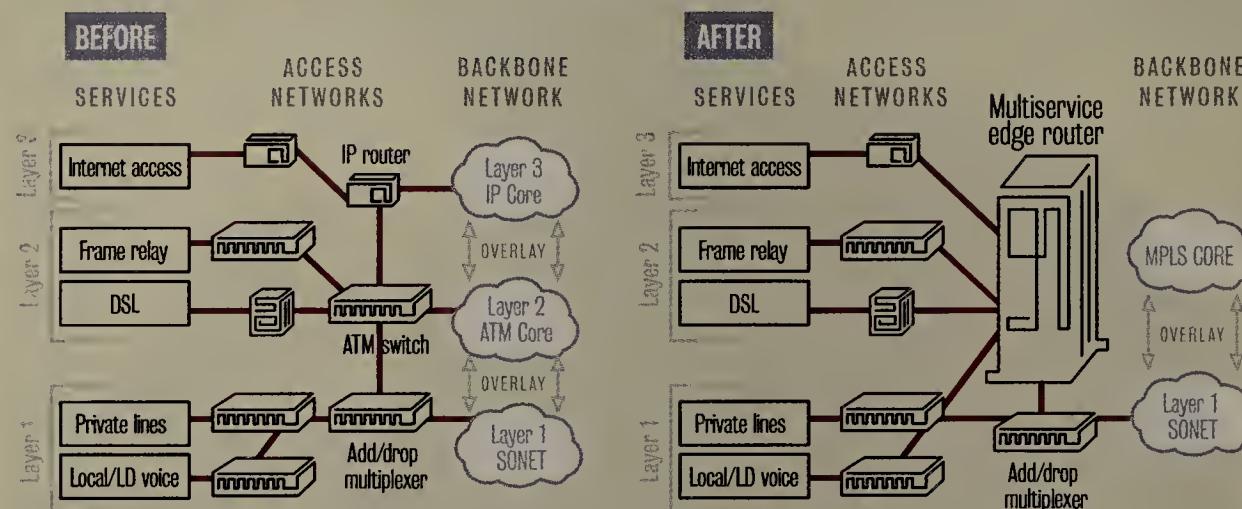
Ethernet service delivery to enterprises is another key growth niche for edge routers. According to Infonetics Research, worldwide Ethernet service revenue was up 132% to \$5.9 billion in 2005 and is expected to jump 280% between 2005 and 2009.

That will spur plenty of sales. Infonetics now tracks a new segment of service provider product specifically for Ethernet service delivery and aggregation applications: the carrier Ethernet switch router (CESR).

CESR sales are expected to more than

### The multiservice market

The ability to combine disparate, service-specific networks is one of the drivers behind demand for edge routers.



Carriers are required to operate, maintain and support three distinct networks for IP, ATM and SONET traffic.

Multiservice edge routers enable carriers to decrease operational costs by consolidating Layer 2/3 networks and the devices required to access them.

double to \$5 billion from 2005 to 2009, as carriers become increasingly reliant on Ethernet to transport IP traffic in their networks, according to Infonetics.

"What we're seeing there is the desire from a customer standpoint to do more than just plain-Jane best-effort Ethernet," says Mike O'Malley, group manager of portfolio marketing at Tellabs. "The realization is that I want to differentiate my Ethernet offering with the same type of [service-level agreements] that I can offer today on ATM in order to capture that additional price premium from ... quality of service guarantees."

But the forte of Tellabs' 8800 multiservice router is just that — multiservice routing. Multiservice routing entails aggregation and provisioning of multiple Layer 2 data services — Ethernet, frame relay, ATM and private line — for enterprise service transport or delivery over an IP/MPLS core.

The selling point for carriers is that they can consolidate multiple overlay networks, each dedicated to one service, into a single converged network supporting multiple services. Not only is this easier for a service provider to manage, but it reduces capital and operating expenditures — money that could reduce the cost of telecom services for enterprises or be invested back into the carrier network for additional service rollouts.

The Tellabs 8800 is a key component of Verizon Business' (the former MCI) Con-

verged Packet Access edge architecture.

Another application where the Tellabs 8800 is finding traction is wireless aggregation and backhaul — the practice of taking traffic beyond its destination and then back to it in order to reduce expense or accommodate changing transmission patterns. As more users access content from their handheld devices, PDAs and cell phones, wireless becomes just another access technology to support at the edge for transport and delivery of content through the core.

Infonetics says wireless backhaul will be one of the hottest market segments over the next five years. The firm recently surveyed 29 incumbent local exchange carriers, interexchange carriers, ISPs and competitive LECs. More than 50% offer mobile voice and data services, and of these 73% build their own transport network to do the backhauling.

This was one of the factors that prompted Nortel to exit the multiservice interworking market for its MPE 9000 edge routing in favor of wireless backhaul and VoIP. Another factor was that Nortel, by its own admission, is not a leading vendor in the carrier data service market.

Redback is one, though, specifically in DSL/broadband aggregation. The company's revenue in edge routers ranging from 2.5Gbps per slot to 10Gbps per slot more than doubled from 2004 to 2005, from \$44.9 million to \$91.9 million, Dell'Oro says.

Redback says customers are now looking

at the company's SmartEdge routers for more than broadband aggregation.

"Everyone, without exception, is building or at least thinking of deploying a new IP edge network that supports multiple services at a single IP edge," says Marco Wanders, chief marketing officer at Redback. "The way that routers need to handle traffic is fundamentally different than what it used to be. Routers have always been designed to do either business services or a single consumer service [such as] Internet access. Right now, routers need to be supporting multiple services at the same time."

A key component of enabling multiple services from a

single IP edge architecture is virtual routing, Wanders says. Virtual routing lets service providers partition and isolate public and private services in a single router into separate physical and logical routing domains. This allows them to also separate traffic in a single router.

Redback's latest instantiation of virtual routing is housed in the SmartEdge 100, which debuted in March. The SmartEdge 100 is intended to enable the delivery of residential triple-play broadband services, including VoIP, real-time video and content delivery, and business Ethernet services such as MPLS- and Virtual Private LAN Service-based VPNs.

The router, a scaled-down version of Redback's SmartEdge 400 and 800 models, is designed for new network deployments, such as wireless network aggregation and backhaul, and multitenant units, such as university dormitory, hospitality, healthcare and government organizations.

With a variety of applications and requirements, the market for edge routers remains healthy — so much so that Alcatel, Tellabs and Redback are making inroads and opening the market to more players than just the duopoly of Cisco and Juniper.

"We're seeing a continual movement toward converging networks together, but the competition hasn't changed," Tellabs' O'Malley says. "The customer that can deliver the same services most efficiently is going to win." ■



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a real-time Linux operating system that is secure and not vulnerable to attack. And,

since encryption is a standard feature, it is impossible for anyone to intercept sensitive communications. Best of all, the Zultys MX250 does all this straight out of the box. To learn more about adding secure VoIP, access [www.zultys.com/nw](http://www.zultys.com/nw).

**Z U L T Y S**

VoIP vs. VoIQ

# TECHNOLOGY UPDATE

AN INSIDE LOOK AT TECHNOLOGIES AND STANDARDS

## Security analyzers target vulnerabilities

BY KOWSIK GURUSWAMY

Protocol abuse targets vulnerabilities in many types of devices and applications, from firewalls, VoIP controllers and VPN gateways to intrusion-prevention systems and other perimeter defense. Despite the considerable investments made in security infrastructure, many vulnerabilities remain undetected.

To alleviate protocol abuse, a new class of product — the security analyzer — can help IT departments assess the security of IP-based products, service or applications. A security analyzer utilizes a rigorous process, complete with an audit trail and remediation scripts, to find and fix vulnerabilities before deploying systems and software into production networks.

A security analyzer connects to a system and emulates hacking by generalizing techniques hackers employ and applying these as a comprehensive set of protocol attack vectors in a systematic, repeatable fashion. Unlike source code analyzers and vulnerability assessment tools, security analyzers can be used by nonexperts to assess systems and applications in a lab environment.

Security analyzers detect known and unknown zero-day vulnerabilities by subject-

ing the target system or software to many permutations and combinations of protocol abuse attacks. To analyze for unknown vulnerabilities, maximum protocol abuse is achieved through extremes of valid, invalid or unexpected inputs that violate the protocol's specifications. Examples of these extremes include formatting a field's type, length or value incorrectly, inserting illegal characters and adding trailing blanks.

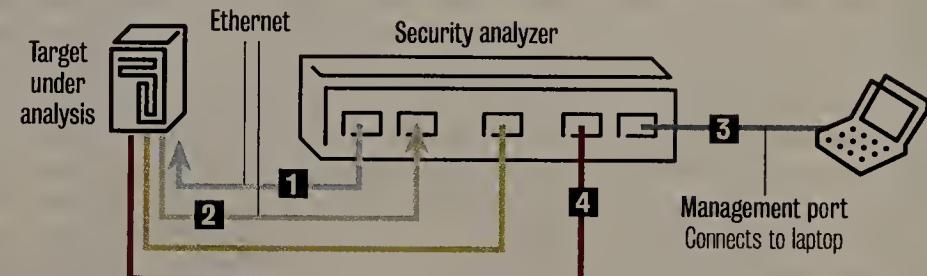
The key to finding protocol vulnerabilities is understanding a protocol's potential weak spots. Comprehensive coverage is critical because, just as the failure of a single part can cause an airplane to crash, a single protocol vulnerability can expose an entire network to attack. But to be truly effective, security analyzers must also operate efficiently with a finite and well-conceived set of protocol attack vectors.

A security analyzer subjects the target system or application to a large number of attacks — potentially millions. During this onslaught, the state of the target is continuously monitored. Details about any anomaly or unexpected result are logged in a database that provides a complete audit trail to establish baselines and historical regressions that are useful when comparing products, releases or configurations. An analyzer also can create a self-extracting Linux-based executable file capable of replicating the exact attack for each vulnerability. This file then can be shared with the vendor or development team to expedite the remediation effort.

When the target under analysis fails or locks up (the intended result of many hacker attacks), the security analyzer issues a reset command through an out-of-

### HOW IT WORKS: Security analyzers

A security analyzer emulates hacking to discover vulnerabilities in network applications and devices.



- 1 The security analyzer subjects the target under analysis to an onslaught of attacks that abuse standard protocols.
- 2 The analyzer then constantly monitors and assesses behavior of the target under analysis.
- 3 The analyzer creates a detailed audit trail of problems or anomalies for later analysis or remediation.
- 4 When necessary, the analyzer automatically resets the target under analysis via the command line interface or by cycling its power.

band channel. If this fails, the analyzer reboots the target system by cycling its power off and on again. Such automated controls allow the full security analysis to be completed while unattended, potentially overnight.

The ability to pinpoint vulnerabilities in a stand-alone system or application provides a practical way to compare competitive product offerings, possibly against a benchmark, before making a purchase decision. Additional post-purchase applications include alerting the vendor to a vulnerability and assisting with the remediation effort, verifying patches or profiling new releases as part of a change management process,

and evaluating and contrasting specific system configurations. An analyzer also can assess the effect of changes in the enterprise security policy, evaluate internally developed software for vulnerabilities, and perform complete security audits.

Security analyzers will enable IT departments to minimize vulnerabilities — and their costly consequences — throughout enterprise networks without increasing the budget for defense-in-depth protections or security consulting.

*Guruswamy is co-founder and CTO of Muse Security. He can be reached at kowsik@musesecurity.com.*

### Got great ideas?

■ Network World is looking for great ideas for future Tech Updates. If you've got one, and want to contribute it to a future issue, contact Senior Managing Editor, Features Amy Schurr ([aschurr@nww.com](mailto:aschurr@nww.com)).

### Ask Dr. Internet

By Steve Blass

We use the directory index listing feature to display the directory of our document archive on an Apache Web server. Long file names are getting chopped off by Apache in the generated Web pages. Can we configure the server to show the entire file names in directory index listing pages?

Yes — Apache Versions 1.3.2 and later can use configuration directives provided by the mod\_autoindex

module to customize the appearance of automatically generated directory index listings. To do this, use the NameWidth option available as part of the IndexOptions directive. This directive can be used in the main server configuration file, a virtual host or directory configuration section, or in a directory-level htaccess file. Place a line in your configuration that looks like "IndexOptions NameWidth=\*". The asterisk is a wild card that tells Apache to give as much space to the file name column as needed to show the

longest file name in the list. You can set a specific width by replacing the asterisk with the number of characters you want to use for the column. Other options include FancyIndexing to show file and folder icons, and FoldersFirst to tell Apache to list folders above file names in directory listings.

*Blass, a network architect at Change@Work in Houston, can be reached at dr.internet@changeatwork.com.*



**GEARHEAD**  
INSIDE THE  
NETWORK  
MACHINE  
**Mark Gibbs**

Last week we discussed the Lyson Continuous Ink System, which we are very impressed with. We concluded with the note that we had attempted to fine-tune the output color profiles and managed to screw them up royally.

A couple of calls to Lyson's chief support manager, Ken Holtane, got us sorted out. It turns out that two things were wrong — Lyson's documentation for OS X 10.4 wasn't accurate (to be fixed soon), and we had misunderstood how color profiles are implemented under OS X.

Last week, for a good reason, we didn't explain what color profiles are. Such a discussion could occupy every Gearhead for the next six months even if we were attempting to cover just the basics (for the Wikipedia entry, go to [www.nwdocfinder.com/3437](http://www.nwdocfinder.com/3437)).

For this reason, we are going to simplify the topic: A color profile is the range of colors that a given reproduction system (such as a monitor or a printer) can display from the entire range of possible colors.

The color space most of us are familiar with is RGB, or red, green and blue, which is an additive model — adding different amounts of each color creates a specific hue.

The problem is that RGB doesn't define what red, green and blue mean. For that, we need to turn to absolute color spaces, such as standard RGB (sRGB) or Adobe RGB, which

define exactly the meanings of each of the primary colors in terms of the CIE 1931 color space (again, see the very good Wikipedia article at [www.nwdocfinder.com/3438](http://www.nwdocfinder.com/3438)).

So, your monitor has a color profile that is peculiar. It is peculiar not only to the brand but also to that individual monitor. If you set up your monitor properly using a tool such as Adobe Gamma, which is installed with Adobe products such as Photoshop, then you will be creating an

## Color correcting for display and print is a technically complex subject.

International Color Consortium (ICC) profile.

This profile provides the data that changes the color space used by, say, Photoshop, into the color space of the display. This means the colors shown on the display will be perceptually the same as when the image is on another display that has also been properly profiled.

When you import, say, a JPEG photograph, it has its own color space called YCbCr, which is used for video systems (see the Wikipedia entry at [www.nwdocfinder.com/3439](http://www.nwdocfinder.com/3439)).

Programs such as Photoshop have to translate the YCbCr color space into the color space they use (typically sRGB or Adobe RGB 1998) and correct for the display's characteristics using the ICC profile.

So far so good, but now we want to print. Printers such as the Canon i9900, which we discussed last week, have their

own color-management systems, and they know the characteristics of the inks they are supposed to use.

But when you use different inks, as we wanted to, you have to tell the printer to mind its own business and not make any color corrections, and tell Photoshop what printer profile to use. In other words, Photoshop has to translate the color space it is using, such as sRGB, into the color space that the printer can render.

In the case of the Lyson Fotonic inks we wanted to use with our Canon i9900, Lyson provides profiles for inks for a variety of paper types, such as satin, gloss and luster. The reason for a profile for each type is that the paper's reflectivity, ink absorbency and other optical and printing characteristics change how the color appears when printed.

In short — a goal that this column has completely failed to realize — color correcting for display and print is a technically complex subject. On the other hand, providing you at least understand how color workflow operates — that is, the translation from one media to another, for a given combination of software, printer, ink and paper — you should be able to reliably achieve a high level of color fidelity.

*Let us know how you do by e-mailing gearhead@gibbs.com. We end this week with a question: What causes Windows to stop showing the Start menu or any grouped entries in the Start task bar? This is happening frequently on one of our PCs, and we cannot find out what the problem is.*

## Cool Tools

Quick takes on high-tech toys. **Keith Shaw**

### Palm Treo 700p has Palm OS, EV-DO access

When Palm launched its Treo 700w smart-phone a few months ago, many felt that the company was abandoning the Palm operating system in favor of Microsoft's Windows Mobile operating system. Today, the company helps allay these fears with the announcement of the Treo 700p, which uses the Palm operating system (Version 5.4.9) and can operate on the Code Division Multiple Access (CDMA) EV-DO high-speed wireless network. Pricing and availability of the 700p will be announced later by carriers, Palm says.

The 700p's EV-DO access will enable faster download speeds of e-mails and attachments, and will enhance streaming multimedia content, Palm says. The 700p will ship with a Palm built-in streaming application to let users stream live TV, movie clips and audio streams. The 700p will include built-in, dial-up networking features, which turns the smart-phone into a wireless modem via USB or Bluetooth wireless (though carriers have the final say on whether to support dial-up networking).

The 700p will support Microsoft Exchange Server 2003 ActiveSync, which includes contact synchronization as well as e-mail and calendar sync. Out of the box, the 700p will support e-mail from Yahoo, AOL and Google's Gmail Internet mail services. In addition, the device will include DataViz Documents To Go Version 8.0, which includes full PDF support for attachments,

memory (with 60MB available for users), Secure Digital memory card support (for cards up to 2GB), and the Pocket Tunes audio player for listening to music.

### HP debuts new mobile products

At its Mobility Summit last week, HP launched more than a dozen products aimed at businesses and consumers wanting to become more mobile in their computing. HP debuted five business notebooks, including the ultraportable HP Compaq nc2400 — the thinnest and lightest HP notebook with an optical drive to date. The notebook weighs less than 3 pounds and offers a 12.1-inch widescreen display with a full-size keyboard. Wireless support includes options for 802.11a/b/g as well as Bluetooth 2.0. Options for processors include the Intel Core Solo Processor (1.06GHz or 1.2GHz) or the Intel Celeron M Processor 423 (1.06GHz). Features include as much as 2GB of memory, as much as 60GB of hard drive space and an Intel Graphics Media Accelerator 950 graphics card (with 128MB of memory). The system will start at \$1,600 and is expected to be available this month.

Other business notebooks launched by HP include the tc4400 Tablet PC series (starts at \$1,650, available in early June), a convertible tablet notebook; the nc6400 series (starts at \$1,550, available this month), which includes mobile broadband modules to switch between wireless networks (CDMA EV-DO or UMTS/HSDPA, for example); the nx7400 series (starts at \$749, available this month), a 15.4-inch widescreen budget model; and the 8400 series (starts at \$1,600, available this month), which includes Intel Core Duo processors, ATI graphics and a 15.4-inch widescreen display.

*Shaw can be reached at kshaw@nww.com. Don't forget to watch him each week as he explores the world of what's cool in high-tech in the Cool Tools Video Show at [www.networkworld.com/video](http://www.networkworld.com/video). New shows online every Thursday!*

Palm's latest Treo offers the Palm OS and EV-DO wireless access.

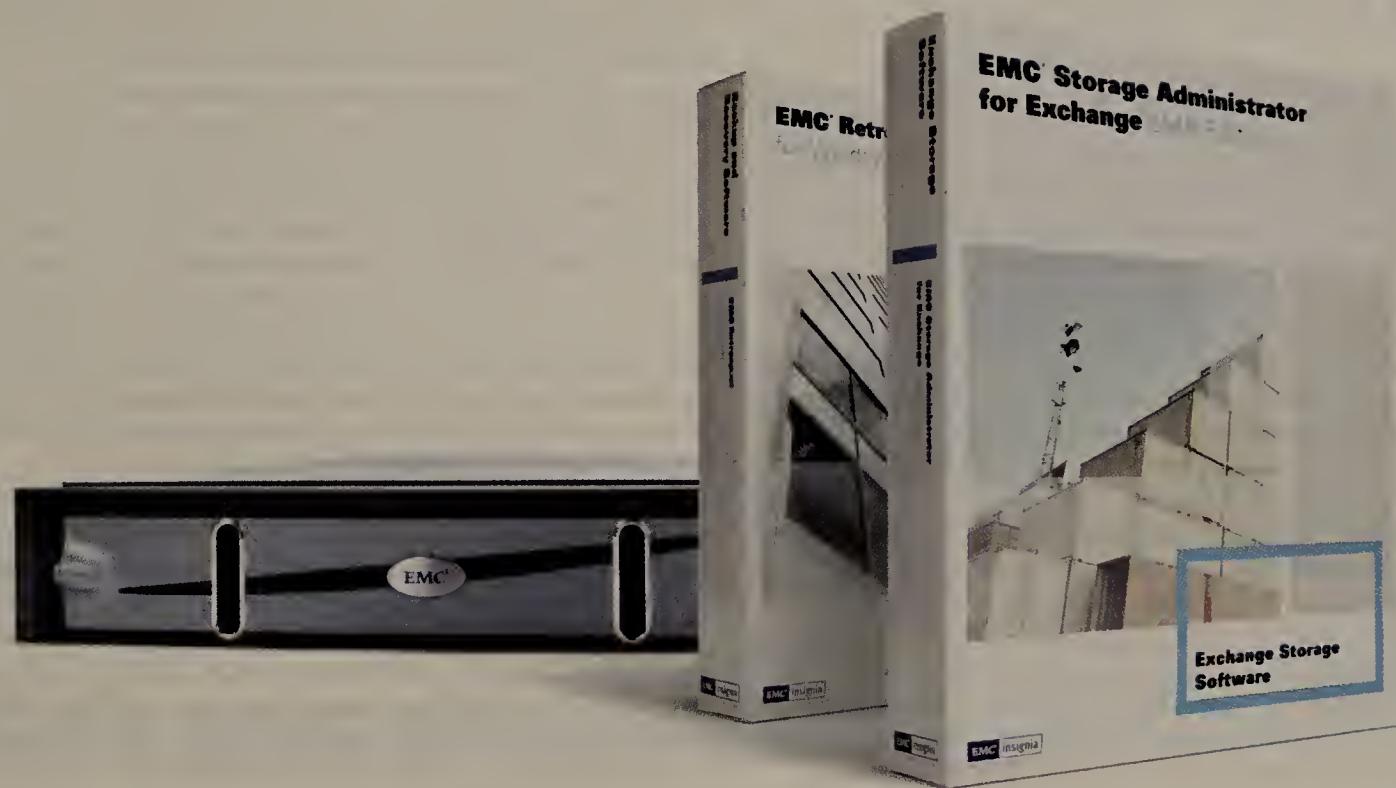
and Word, Excel and PowerPoint compatibility.

Other 700p features include a 1.3-megapixel camera and camcorder, 128MB of



**HP's nc2400 is the company's latest ultraportable notebook.**

# Using Exchange? Meet EMC Insignia.



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## On Technology

John Dix

# The three levels of SOA maturity

**A**sked to identify where service-oriented architecture falls on Gartner's hype cycle — which identifies stages of technology development from invention to broad acceptance — most IT executives would probably say we're nearing the "peak of inflated expectations." Rhetoric is running high and vendors are scrambling to recast what they do as critical to SOA.

Thomas Erickson, general manager of Systinet, a company that sells what it calls an SOA governance and life-cycle management platform, has a more granular view. He has identified three stages of SOA maturity.

In the first stage companies service-enable their applications using standard APIs. Although the costs are modest, so are the business gains, Erickson says.

If you want to tie your SAP order-management system to your warehouse system, having service-enabled those systems using a common language will simplify the process, he says. That's the upside. "But someone will still have to go in and manually make the connections," Erickson adds. "It is not really service oriented. The systems will be tightly coupled, so a change in one system might break the other." This is where most customers are today, Erickson says, although some companies are further along than others.

The few companies that have entered the second stage are those that use SOA services to build new or modernize existing applications. Reaching this stage means a company has visibility into who is using which services and a sense of application interdependencies. What's more, in this stage it becomes feasible to reuse services because more thought is put into policies that services must adhere to, such as security and uptime requirements, Erickson says.

One limitation remains, however: There is no automated way to ensure changing a service doesn't break linked components, Erickson says. That comes in the third stage, with the arrival of what he calls dynamic SOA. In this environment a new version of a service would notify consumers about the upgrade, who could then determine if and how they might benefit from the update. If it might cause more harm than good, the consumer could decide to keep the existing service. "It all becomes more dynamic," Erickson says.

This dynamic environment is still a few years off, he says, and depends on the development of more standards to ensure policies are interoperable.

While Systinet's 170 customers today are large companies, Erickson says these big players soon will start using SOA in the supply chain, which will necessitate smaller players coming up to speed.

That type of shift will start to move SOA along the Gartner curve.

— John Dix  
Editor in chief  
[jdix@nww.com](mailto:jdix@nww.com)

# Opinions

## Desktop search

Regarding "Desktop search tools seen raising red flags" ([www.nwdocfinder.com/3424](http://www.nwdocfinder.com/3424)): Many of the IT managers quoted in this story are comical at best and disturbing at worst. While they were off deploying massive, costly, questionably useful (but job-security-ensuring) enterprise/knowledge/customer relationship/fill-in-the-corporate-sinkhole management suites, simple but highly effective indexing and search software utilities came out of left field, and the people these managers are supposed to be serving voted with their feet. IT managers just finished spraying digital Raid on "productivity-wasting" IM clients; now they have to whip up a new batch for desktop search utilities. What's their first defense — the old saw that these "untested" apps are messing up their user's desktops? (I've beta-tested them all on numerous laptops and desktops running Windows 2000/XP with nary a problem.) The concern for indexing network drives is legitimate, but can be solved at the client and server end.

If IT managers spent more time keeping apprised of useful technology, corporate usage trends and educating users, and less time in techno-babble obfuscation, their job and the jobs of the people they are supposed to be serving would be more pleasant. The deer-in-the-headlights look when desktop search hits the streets is not going to cut it. Get educated or get packing!

William Daunch  
Cary, N.C.

## Encouraging rootkits

Regarding "Does open source encourage rootkits?" ([www.nwdocfinder.com/3425](http://www.nwdocfinder.com/3425)): The problem is not rootkits; the problem is Windows, which allows the kernel to be modified without user knowledge. Until

Windows is fixed so that root user privileges are required for kernel modifications, nothing will change. Using Windows is akin to playing Russian roulette — sooner or later you will lose, and Microsoft really doesn't care. Why should they care as long as consumers want the least expensive PC, and Microsoft has a monopoly on that market?

Larry Sokol  
Boynton Beach, Fla.

I have yet to see a rootkit published under the General Public License or Berkeley Software Distribution license. Passing a rootkit around without a written license makes it public domain, not open source. I would also like to know why McAfee feels that open source is to blame for rootkits, especially since they mainly attack proprietary programs.

Dennis Soper  
Systems administrator  
University of Oregon  
Eugene, Ore.

## Market for Boot Camp

Regarding Kevin Tolly's column "Apple's Boot Camp: A step backward" ([www.nwdocfinder.com/3426](http://www.nwdocfinder.com/3426)): As IT professionals we might need to step back to see that there will be a market for this, especially if Apple and Microsoft support it as they should. There are thousands of users who would welcome the space-saving convenience of having one piece of hardware that will run both Windows and Mac. Many of these people may not be willing or able to run a virtual PC solution to accomplish this.

Richard Manning  
Lockport, N.Y.

E-mail letters to [jdix@nww.com](mailto:jdix@nww.com) or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

**Readers respond** Find out what readers are saying about these and other topics.  
[www.nwdocfinder.com/1030](http://www.nwdocfinder.com/1030)



# 'Net neutrality: A debate about nothing?

**I**t is going to end the Internet as we know it. It will save the carriers and let them build the Internet we need. 'Net neutrality is a big issue, with everyone from network experts to politicians weighing in.

'Net neutrality basically means that the carriers treat all traffic equally. Carriers are questioning this logic and want to be able to charge extra for better treatment. Sites that pay more would get a higher priority; those that don't would go to the end of the line.

The problem with 'Net neutrality arguments is that they miss an important point: Can the carriers provide differentiated service? They can set priorities, but does that mean people will see the difference — that it will really matter? I don't think so.

Carriers would implement 'Net non-neutrality through QoS and bandwidth management. Both have little effect except at high utilization. When utilization is at 62%, there is an average of one packet in the queue; even at 75% utilization the average climbs only to a few more than two packets.

Assume a packet arrives at a bad time, when the queues are above average length. At 60% utilization, there will be only about two messages in the queue 95% of the time; at 75% utilization,

the queue would lengthen to approximately eight packets. That may sound bad, but it really isn't. Assume a T3 line is used — not very fast by today's standards — and all messages are 1,500 bytes — near Ethernet's maximum. The wait adds only a few milliseconds.

How often are lines at 60% to 75% utilization? Not very often. Most carriers have engineered

**Paying for premium service over the Internet backbone would be paying for nothing. You would get the same level of service at the inexpensive rate.**

their networks to run at lower utilization, and it is high only for short times during peak hours, if at all. The majority of the time, networks are running at lower rates, with no or very small queues.

The result is that paying for premium service over the Internet backbone would be paying for nothing. You would get the same level of service

at the inexpensive rate. But is there a way for the carriers to make it have a difference? Yes: They could cause problems artificially. For example, they could make the allowable queue length for low-priority traffic very small, causing lower-priority messages to be discarded at an unnaturally high rate.

Even this might not work. Any carrier that does this would affect a lot of traffic, because most users would not pay the premium price. The word would get out these carriers run a poor-quality network. Enterprises, DSL and cable providers would hesitate to use them.

The move from 'Net neutrality would have little real effect. Carriers could sell a service to real-time-media people to put them at the front of the queue for temporary problems, but I am not sure their customers would notice. It was tried with frame relay a long time ago and didn't work then.

Sit back and enjoy the debate, but don't worry because it will have little effect no matter which way things turn out.

*Layland is president of Layland Consulting, specializing in new technology and its impact on enterprise networks. He can be reached at robin@layland.com.*

## Big bank goes phishing

**T**he thing about security is, well, security happens, and sometimes it doesn't happen, and then sometimes it's over the edge with mind-numbing incomprehensibility. I tend to notice these things.

I was on the road recently. I forgot/lost/misplaced my password to log on to Internet banking so I could pay my staff. I called 1-800-AmSouth and asked for my password. They asked me for: 1) my name; 2) account name and number; 3) address; 4) federal ID number; and 5) date of birth. Then they gave me my password.

My wife overheard the conversation and raised hell with me about how easy it was to gain access to our intertwined online accounts with no decent security check. AmSouth's proof-positive security check was, in fact, public information.

Then it only got worse. AmSouth called me at home. The woman on the phone said she needed to discuss a problem with me, but first I needed to answer a couple of questions. Then she proceeded to ask me for personal information to "protect me" and "confirm my identity."

What's wrong with this picture? Millions of e-mail phishing attacks reach out to snag gullible somebodies — for financial gain or identity theft. One type of phishy e-mail induces a greedy victim to respond, promising vast wealth. Others attempt to lure the unsuspecting into "fixing" their PayPal or bank accounts. Then there are those that use fear: "Your account is in serious delinquency" or "You just bought four plasma TVs and we want to confirm your order," or "The wire transfer you initi-

ated for \$10,000 needs secondary confirmation."

Spear-phishing fine-tunes the art to select companies specifically targeted for their assets. It's all about the money.

Especially in the financial sector, we teach companies and their staff about social engineering, identity theft, phishing and all the ways the bad guys want to scam you, your company and your customers. Then we teach them what not to do — how not to respond to phishing or suspicious activity at work or at home, so they can avoid becoming victims.

**AmSouth . . . was using the same techniques phishers use.**

Here was AmSouth acting and operating just like a criminal enterprise trying to scam personal information from me. It was using the same techniques phishers use to try to get hapless victims to release private information as a pretext to identity theft.

Under the pretense that this really was AmSouth calling me, albeit using phishing-like methods, I called 1-800-AmSouth and asked whether there was an issue with one of my accounts. They verified my identity: name, Social Security number, date of birth, mother's maiden name. AmSouth clearly has security issues in establishing proof-positive identification using publicly available information — including those things I warned it

about almost 15 years ago, and nine years ago and ... you get the idea.

I now had a truly helpful fellow from AmSouth's Alabama headquarters tell me that everything in my accounts was fine. But I am the suspicious type. Something still felt phishy, so I called my local branch, where they know me well yet actually require photo ID when I make transactions in person. I asked if there was a problem with any of my accounts. Thirty seconds later I was told: "You didn't pay 'this item' on time. It's 10 days late." I drove to the bank and made the payment.

AmSouth is the current poster child for how to do security wrong, encourage phishing by illegal entities and offer no alternative to this lame attempt at identity verification. (For the record, when asked to comment, AmSouth spokesperson Jerri Franz said, "We do not discuss the details of our information security.")

It's so simple. "Hi, Winn. There seems to be a problem with your account. Why don't you call or visit your local branch and see what's going on?" Or, "Hi, Winn, you might want to log on to your accounts. There might be a problem with one of them." Or, "Please call 1-800-AmSouth . . ." — but then there is that proof-positive ID problem.

There are plenty of more viable security alternatives to phishing. Or am I wrong?

*Schwartzau is a security writer, lecturer and president of Interact, a security awareness consulting firm. He can be reached at winn@thesecurityawarenesscompany.com.*



### ENTERPRISE ISSUES

**Robin Layland**



### ON SECURITY

**Winn Schwartau**

# CONVERGENCE. SPEED. INTELLIGENCE FROM EDGE TO CORE



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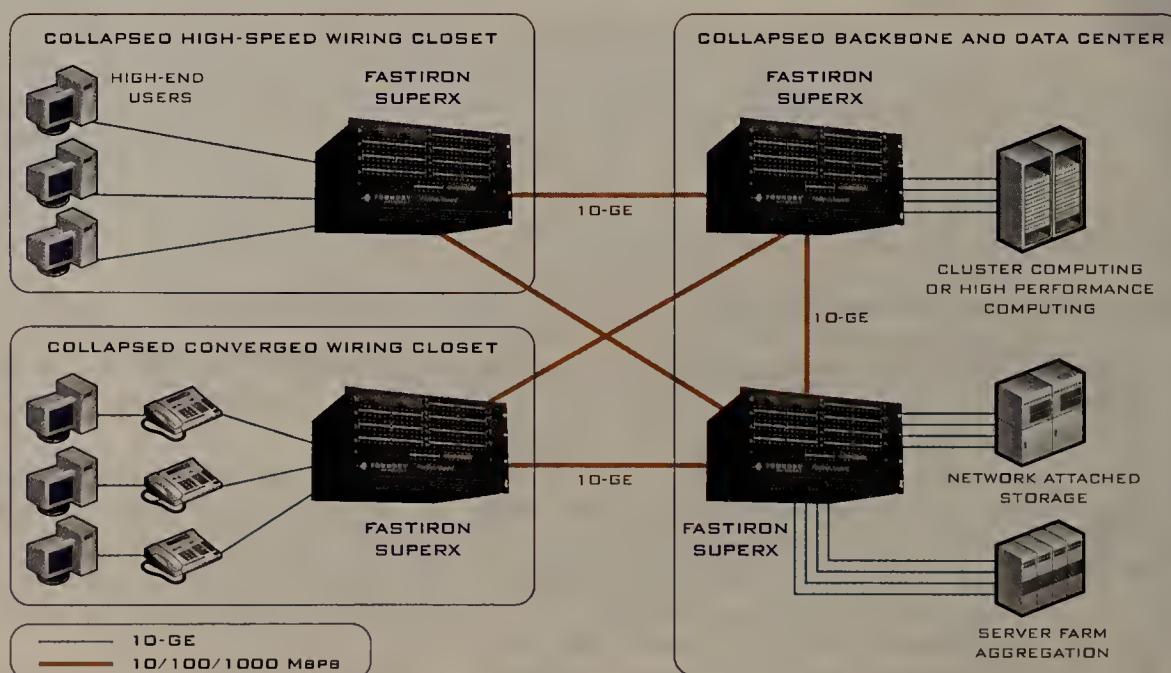
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# guide

**to**

Voice over IP

## How to protect your VoIP network

BY DAVID PISCETELLO

**V**oIP has finally arrived as a mainstream application. IP PBX equipment sales topped \$1 billion in 2005, for the first time outpacing traditional TDM PBXs, according to Dell' Oro Group.

In fact, analysts predict that IP PBXs will account for more than 90% of the market by 2009. Before you deploy VoIP, however, you need to be aware of the security risks and the countermeasures that you can take.

Security is important in every context, but especially when you're replacing the world's oldest, largest, and most resilient and available communications network. While no individual security measure will eliminate attacks against VoIP deployments entirely, a layered approach can meaningfully reduce the probability that attacks will succeed.

### The threats

Enterprise VoIP customers and service providers are vulnerable to many of the same impersonation-based attacks "phreakers" attempt against traditional telephone and cellular services. The goals — identity and information theft and toll fraud — are the same.

Many attacks focus on VoIP endpoints. The operating systems, Internet protocols, applications and management interfaces of VoIP hard phones and computers running softphones are vulnerable to unauthorized access, viruses and worms, and many denial-of-service (DoS) attacks that exploit common Internet protocols and VoIP protocols themselves.

VoIP uses the IETF Session Initiation Protocol (SIP) and the Real-time Transport Protocol (RTP) for call signaling and voice-message delivery. These and complementing session description and RTP control protocols (SDP, RTCP) do not provide adequate call party authentication, end-to-end integrity protection and confidentiality measures on call signaling and call data (such as media streams containing compressed and encoded speech). Until these security features are implemented and put into service, attackers have many vectors to exploit.

### ► The business case for VoIP

Benchmarks for VoIP expenses and ROI. Page 50.

### ► Breaking the costs down by vendor

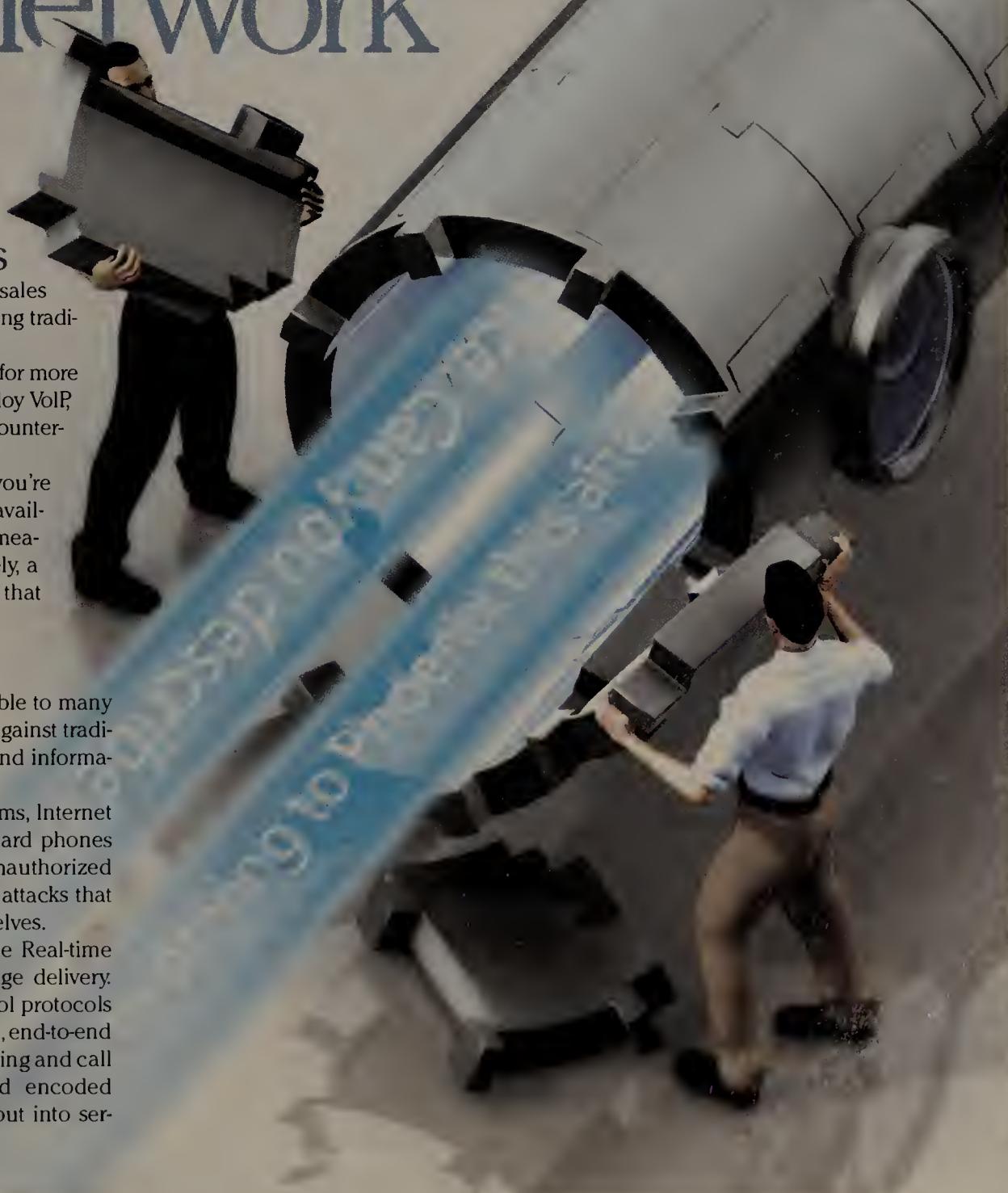
Cisco is highest in start-up costs; Nortel deployments are most expensive to manage. Page 54.

### ► VoIP Research Center

Go online for the latest VoIP news at [www.nwdocfinder.com/3442](http://www.nwdocfinder.com/3442)

NETWORK WORLD SPECIAL FEATURE

Beware of phreakers, fraudsters, sniffers, RATS, SPIT, men in the middle, broadcast storms and Wi-Fi jamming.



Today SIP and RTP protocols do not encrypt call-signaling packets and voice streams, so identities, credentials and SIP Uniform Resource Identifiers (phone numbers) of callers can be captured using LAN and wireless LAN (WLAN) traffic-collection tools (sniffers).

An attacker can use captured account information to impersonate a user to a customer service representative or self-service portal, where he can change the calling plan to permit calls to 900 numbers or to blocked international numbers. He also can access voice mail or change a call forwarding number.

Impersonation attacks commonly are used to perpetrate toll fraud, but financially motivated attackers also can capture voice conversations and later replay them to obtain sensitive business or personal information.

Flooding VoIP targets with SIP call signaling messages (e.g., Invite, Register, Bye or RTP media stream packets) can degrade service, force calls to be dropped prematurely and render certain VoIP equipment incapable of processing calls entirely. VoIP equipment also may be vulnerable to DoS attacks against such Internet protocols as TCP SYN, ping of death and the recent DNS distributed DoS amplification attacks.

VoIP systems also can be disrupted by media-specific attacks, such as Ethernet broadcast storms and Wi-Fi radio jamming. Operating systems and TCP/IP stacks used in new VoIP hardware may be susceptible to implementation-specific attacks that exploit programming flaws. This can cause the system to cease operating or provide the attacker with remote administrative control of the system.

VoIP softphones pose a unique and thorny problem. Softphone applications run on user systems (PCs, PDAs) and thus are vulnerable to malicious code attacks against data and voice applications. IT administrators must consider the possibility that an attacker may try to evade conventional PC malware protection by injecting malicious code via a VoIP softphone application.

Spam often harbors spyware and remote administration tools. Spam over Internet Telephony can carry unsolicited sales calls and other nuisance messages, and programs downloaded to softphones could include hidden malware.

Even this partial description should cause IT managers to assess the risk of introducing VoIP and to develop a policy and an implementation plan to reduce the risks using security technol-

ogy at hand.

### Risk assessment

Voice is a perennial cash cow for traditional telephony service providers, a lucrative emerging market for VoIP vendors and a mission-critical service for businesses. Thus, the most serious risk public (carrier) and private (enterprise) VoIP operators must manage is service disruption.

VoIP users will expect no less than the high availability they are accustomed to receive from the public switched telephone network (PSTN). Accordingly, a thoughtful VoIP deployment plan for all would-be VoIP operators must include measures for reducing the threat of DoS attacks.

Other priority risks include identity theft and toll fraud. Public operators face a greater challenge than do PSTN and cellular carriers with identity and endpoint verification in VoIP deployment because endpoint IP addresses are generally not validated at Internet ingress points, and unlike public telephone numbers, there are as yet no widely adopted methods for VoIP operators to certify or assert cooperatively that a SIP identity is valid.

VoIP operators must manage trust relationships with other VoIP operators carefully and should avoid service arrangements unless they have some confidence that the other providers are using equivalent identity and endpoint verification methods. This might be arranged contractually across an extended enterprise or business-to-business VoIP deployment.

In general, insider attacks are more frequent than outsider attacks, so enterprise VoIP network operators must consider impersonation a threat even if they operate in isolation. Enterprise VoIP managers then must consider methods to detect and block impersonation attacks, and should maintain accounting and auditing tools to help detect abuse and identify perpetrators.

While public VoIP infrastructures may be more frequently targeted for politically motivated attacks and terrorism, private VoIP networks increasingly are at risk of electronic industrial espionage and eavesdropping attacks (for example, employees intercepting privileged calls).

Enterprise customers also must consider help desk and customer care. Service disruption, subscriber impersonation and toll fraud are serious support matters. Resolving disputes and

restoring service to employees who are victims of such attacks sap resources and adversely affect productivity. The effects that security incidents may have on consumer, user, management and even share-

holder confidence can be lasting.

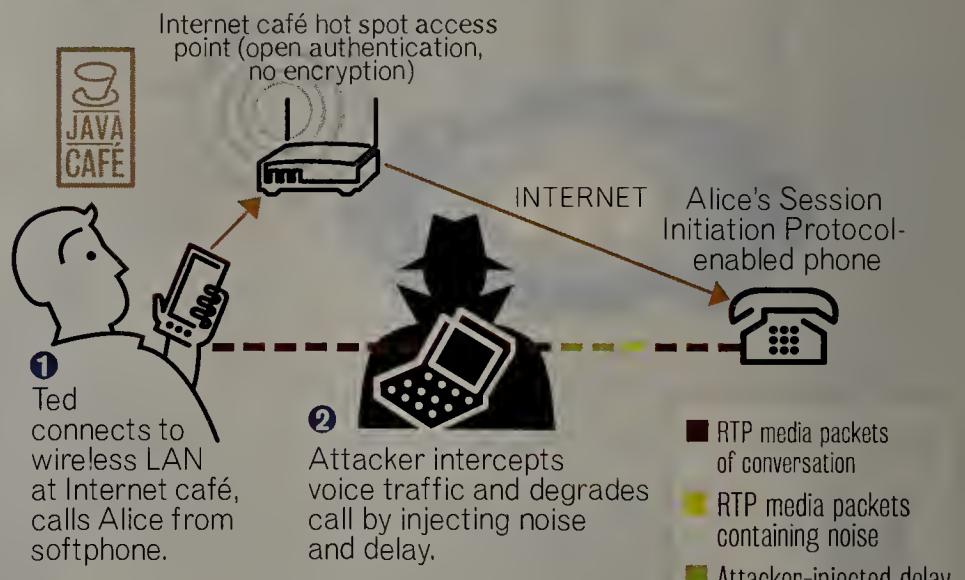
### Countermeasures

VoIP is a new and different type of See VoIP, page 48

## VoIP vulnerabilities

### 1. Call tampering

The attacker can tamper with calls in progress; for example, he could impair the quality of the call by interjecting noise in the Real-time Transport protocol stream, by withholding delivery of RTP packets so that conversation elements are lost or by delaying delivery so participants encounter long periods of silence during the call.



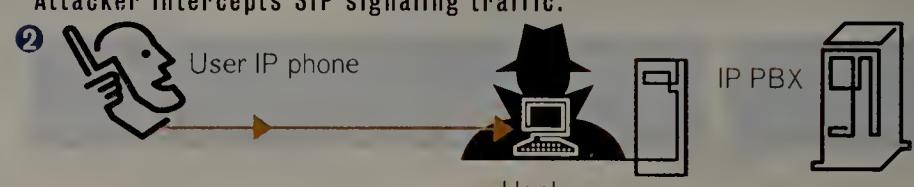
### 2. 'Man-in-the-middle' attacks

VoIP is vulnerable to man-in-the-middle attacks. In MITMs, the attacker intercepts SIP call-signaling traffic and masquerades as the calling party to the called party, or as the called party to the calling party. Once the attacker has gained this MITM position, he can hijack calls via a redirection server.

#### Typical VoIP conversation.



#### Attacker intercepts SIP signaling traffic.



#### Attacker masquerades as the calling and the called parties, and hijacks calls via a redirection server.



## WAN Application Performance



### Application      Performance

ORACLE	CANCELLED
ERP	DELAYED
GAMING	ON TIME
P2P	ON TIME
VOIP	DELAYED

### Application      Performance

NOTES	DELAYED
SIEBEL	CANCELLED
EMAIL	ON TIME
CITRIX	DELAYED
SKYPE	ON TIME

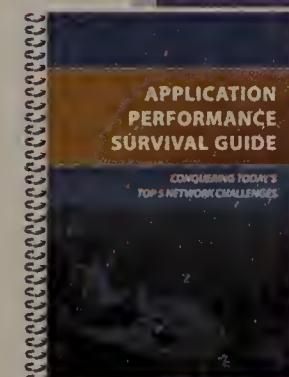


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## VoIP

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Internet application, but ultimately it is another real-time data stream delivered using IP. Many of the security measures widely used today to protect other plain text applications, from telnet and FTP to Web, e-mail and instant messaging, can be used to improve VoIP security.

The majority of VoIP service applications are run on commercial server operating systems. Hardening servers and employing antitampering and host intrusion-detection demonstrably improve an organization's baseline VoIP security. The most frequently recommended server security measures that can be applied to voice servers include:

- Maintain patch currency for operating system and VoIP applications.
- Run only applications required to provide and maintain VoIP services.
- Require strong authentication for administrative and user account access.
- Enable only user accounts required for maintenance and correct operation to deter forced break-ins.
- Implement stringent authorization policies to prevent unauthorized access to VoIP service and account data.
- Audit administrative and user sessions and service-related activities.
- Install and maintain server firewall, antimalware, and antitampering measures to deter DoS attacks.
- Securely configure VoIP applications to prevent misuse; for example, a whitelist of callable country codes can thwart certain call forward, transfer and social-engineering exploits that might result in toll fraud and unauthorized use.

Once VoIP servers and the applications they run are securely configured, build an in-depth defense by adding layers of security around servers. Isolate VoIP servers and required infrastructure (for example, DNS, LDAP) from client machines (phones, PCs and laptops) by using separate physical or virtual LANs (VLAN) to carry management, voice and data traffic.

Use firewalls to limit types of traffic that may cross VLAN boundaries to only those protocols necessary. This compartmentalization is especially effective in reducing the spread of malware from infected clients to VoIP servers in monoculture (such as Windows) networks. This often results in much simpler security policies in each compartmentalizing firewall than the policy you would have to maintain in a single firewall.

Segmentation is a powerful security tool, so don't stop here. The same segmentation methods used to heighten security can be used to implement QoS: For example, putting SIP phones on their own VLAN helps restrict VoIP to permitted devices and gives higher priority to VoIP as IP packets move from network edge to core.

Consider segregating voice user agents (hard phones) from PCs and laptops used to access networked data applications. This may prevent a successful attack against a data segment from spreading to and interfering with voice systems. Firewall performance may be an issue when applying segmentation and policy-based compartmentalization, so plan carefully to avoid adding latency to paths that will transport media streams.

Endpoint security adds an outer layer of security in VoIP deployments. IEEE 802.1X port-based network access control and equivalent network admission techniques provide an additional layer of authorization control by blocking devices from using a LAN or WLAN until they pass security checks.

Administrators can choose to block devices infected with malware or that do not satisfy other admission criteria, such as current patches and appropriately configured firewalls. They can redirect noncompliant devices to an isolated LAN segment that offers limited services or to a LAN where softphone users can access software, patches and malware definition updates required to satisfy admission criteria. In many cases, these security measures can be performed before authentication, to prevent malware (keystroke loggers) from capturing user credentials.

Companies using firewalls to enforce security policy may discover that their current firewall is unsuited to the task of securing voice and data. Traditional network firewalls are designed to permit and deny traffic based on TCP/User Datagram Protocol (UDP) and IP header information: IP addresses, protocol types and port numbers, for example.

VoIP protocols use a large range of UDP ports and allocate them dynamically to media streams. Many traditional firewalls cannot accommodate this behavior without leaving large swaths of port numbers permanently open for VoIP use and other misuses. Certain firewalls do not process UDP efficiently. Others do not support QoS measures to manage latency and jitter so that VoIP calls have toll-voice quality.

IT administrators should consider firewalls that are SIP-aware, that can detect and counterattack against SIP signaling messages, and that can process RTP media streams without adding significant latency.

Application layer gateways (proxies) can play a useful role in VoIP deployment. Incorporating SSL tunnels into SIP proxies is becoming a popular way to improve authentication and add confidentiality and integrity protection on signaling messages exchanged between user agents and SIP proxies.

Many organizations are considering chaining SSL connections to protect signaling traffic between SIP proxies across their organizations and inter-organizationally as well. RTP proxies may be appropriate if your organization must relay media streams among global and local RTP IP addresses and ports. Other organizations are choosing to take advantage of their investment in IPSec to secure VoIP traffic between sites.

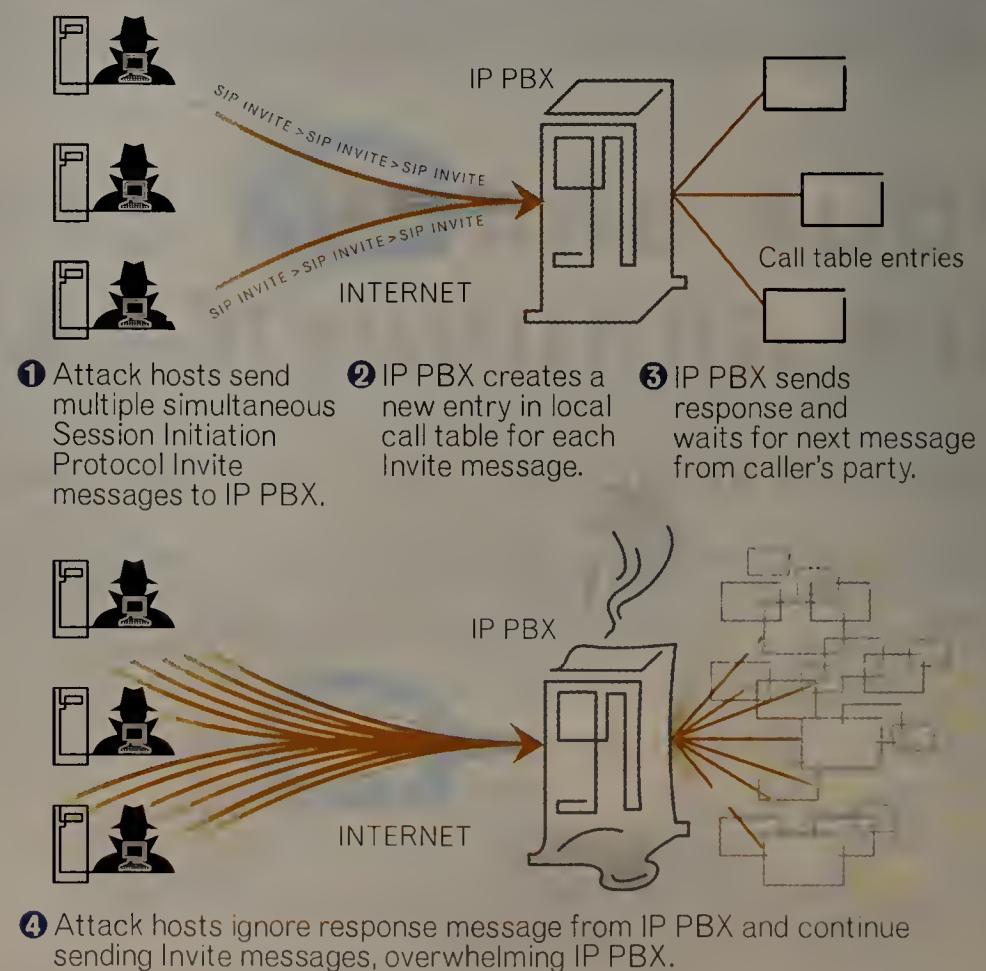
In some configurations, organizations may try to process VoIP traffic preferentially by creating IPSec security associations that prioritize voice traffic over data. Some organizations may want to

filter signaling traffic and RTP media streams through a Session Border Controller (SBC). SBCs operate as back-to-back user agents, concatenating and applying policy to calls between public and private user agents. In some respects, an SBC behaves like a secure e-mail proxy. It can rewrite message headers to hide details of private networks (such as addresses), strip unknown and undesirable header SIP fields, and restrict called-party numbers. Because media traffic flows through an SBC, RTP policies can be enforced at them.

These security measures, along with a proactive security monitoring and intrusion-detection and -prevention plan, not only improve VoIP security, but can greatly reduce the risks to data networks as organizations introduce VoIP. Many of these measures will continue to be useful in deployments even after security enhancements are incorporated into VoIP protocols and architecture.

*Piscitello is president of Core Competence, an ICANN SSAC Fellow and author, with Alan Johnston, of Understanding Voice over IP Security. He can be reached at dave@corecom.com.*

## Anatomy of a VoIP DDoS attack



# “SUNGARD REHEARSED SCENARIOS WITH US A COUPLE OF TIMES A YEAR. SO WHEN KATRINA HIT, I KNEW OUR DISASTER RECOVERY PLAN WOULD WORK.”

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# The business case for VoIP

Nemertes study shows that as companies broaden their VoIP rollouts, setup costs increase — but so do savings.

BY ROBIN GAREISS



## When IT executives make the strategic decision to

implement VoIP and other converged applications, cost savings is one of the key drivers.

But is VoIP really a money saver?

Based on a Nemertes Research survey of 90 IT executives, the answer is yes — over time. In other words, steep start-up costs will be offset in the long run by significant savings.

One of the key findings in this year's study is that companies are spending more time and money on planning, installation and troubleshooting, compared with last year.

The reason is that VoIP increasingly is being deployed as part of a strategic, enterprise-wide convergence project, rather than as a pilot project or a technology deployed in a limited setting, such as a branch office or contact center.

Another important finding of the study is that VoIP equipment generally costs about the same as TDM gear, with the exception of handsets.

### It pays to plan

Since 2004 the amount of time spent planning a VoIP rollout has quadrupled. This is where participants spend

### Planning time increases

More time spent planning can help keep troubleshooting in check.

TOTAL OPERATIONAL START-UP MINUTES PER USER			
	2004	2005	CHANGE
Planning	16	64	300%
Installation	25	48	92%
Troubleshooting	11	21	91%
<b>TOTAL</b>	<b>52</b>	<b>133</b>	<b>156%</b>

most of their overall operational start-up time. They have learned from peers about the nightmares that result from a poorly planned deployment.

Because VoIP is typically part of a larger convergence effort, organizations are spending more time upfront trying to identify steps in the project — and preparing the networks for them. Several early adopter IT executives who participated in the study said if they had spent more time planning, they would have had a smoother rollout and spent less time troubleshooting.

### Is your network ready?

As part of planning, IT staffs should perform or hire someone to perform baseline network assessments, also known as network readiness tests. Companies typically spend \$3,000 per location for small implementations (usually five or fewer sites) or an average of \$63,500 for a comprehensive, multisite evaluation. Comprehensive evaluations range from \$12,000 to \$150,000.

As companies install VoIP in more branch offices and give handsets to more users (as opposed to simply IP-enabling a TDM PBX), the amount of time staffs spend installing the gear increases.

Troubleshooting time also is increasing, but not at the same rate as planning and installation. Troubleshooting includes the time spent repairing problems after installation and until the system is considered full-production. Companies with higher-than-normal troubleshooting times typically devoted lower-than-normal time to planning. So it makes sense that as IT staffs spend more time upfront planning the rollout, troubleshooting time should grow more slowly.

There are three primary reasons behind the increases

in operational start-up time — and thus, cost. First, organizations are taking their VoIP projects more seriously because they are the first step of an overall convergence effort, and consequently need to devote more people from different disciplines (applications, security, voice, data) to the rollout. In 2004, companies devoted an average of 12 people to convergence projects, compared with 27 people by late 2005.

Second, the salaries of IT staff working on convergence projects have increased. The average salary with benefits was \$96,766 in 2004, compared with \$98,621 in 2005.

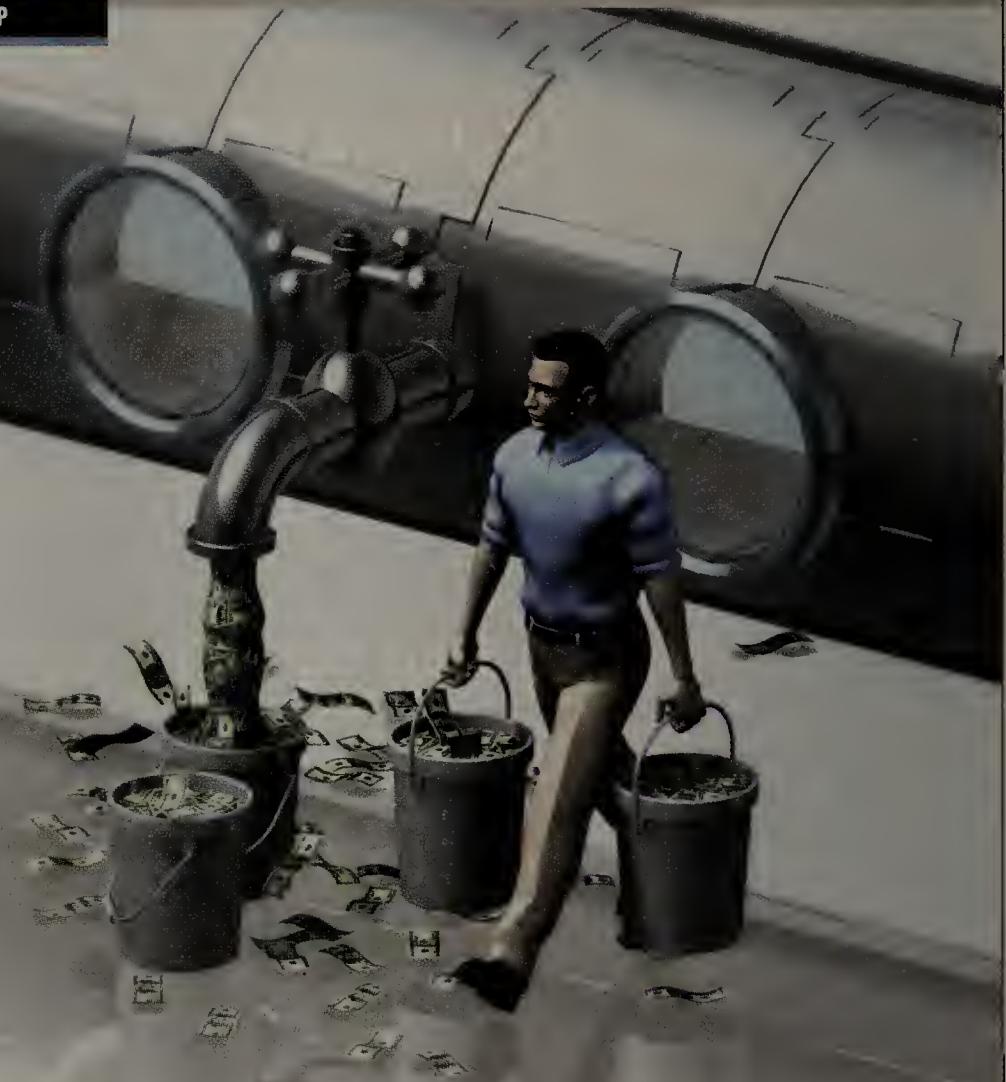
Third, companies are devoting more money to consulting costs related to design and implementation. The median consulting cost is \$23,125, but the range is from \$500 to \$2 million, according to the survey. The goal is to take advantage of the experience of systems integrators and resellers, maintain flexibility with internal staffs, and improve the rate of project success.

### Management tools are key

Management tools often are an unplanned expense, but they're key to the success of a VoIP project. Only about 15% of organizations actually budget for such tools upfront, but more than half seek specialty tools within 12 to 18 months of their rollouts.

The amount organizations budgeting for or buying third-party management tools are willing to spend has increased in the past year. This is primarily because they recognize they need solid tools — and a new class of tools — to manage a converged network effectively. Based on that, the recommended management budget has increased slightly this year. (See "Benchmarks for VoIP deployments".)

See VoIP, page 52



**E-MAIL NEWSLETTER SHOWCASE:****Wireless in the enterprise****Approaches to going 'all wireless'****BY JOANIE WEXLER**

The answer to eliminating cabling beyond the 802.11 mobile access network and into the backbone has been mesh architectures. Meru Networks has devised a wireless alternative it says emulates hierarchical cabled networks.

Using a Meru Wireless Backbone System, client devices communicate with Meru access points wirelessly, as always. From there, the access points communicate wirelessly to the company's Radio Switch in the "distribution" layer, explains Ihab Abu-Hakima, Meru president and CEO.

The Radio Switch overlays multiple channels' worth of bandwidth for greater capacity.

Multiple Radio Switches talk to one another wirelessly, as well. At least one Radio Switch, however, must be cabled back to the high-speed core (data center) Ethernet switch or redundant switch pair.

The Meru controller — which has visibility into the wireless network topology, tracks authentications so no handoff time is wasted when roaming, load-balances access points and handles many other functions — can be cabled to the wired backbone switch for centralized control.

The hierarchical topology contrasts with wireless mesh networks. In a mesh network, 802.11 nodes communicate with one another wirelessly in the backhaul section of the network in a flat topology. Wiring is at the "perimeter" only, between the Ethernet switch, printer, video camera or other edge devices and the nearest 802.11 node.

Mesh is seeing a greater uptake in outdoor networks than as a replacement for cabled LANs indoors. One reason, according to Monte Seifers, director of technology at Black Box Converged Solutions Group, a value-added reseller is that meshes have trouble coordinating VPN security end to end.

"I would be uncomfortable with most of my customers sending sensitive information over mesh," Seifers says, "because mesh doesn't lend itself to encryption algorithms." In mesh networks, the forwarding path is always changing, while VPNs are designed for connection-oriented sessions that require a single authentication.

The need for continual dynamic reauthentications in mobile networks blows that model. The new Meru system, however, operates hierarchically and has Advanced Encryption Standard built in.

In addition, the more hops in mesh networks, the less overall bandwidth is available, which isn't the case with the hierarchical topology, according to Seifers.

Ken Winke, IT director at Optimus, a Chicago post-production house that edits TV commercials and has a 10-access point Meru wireless LAN, says he would "love to get rid of the cabling" for his office's business machines and redeploy it. However, editors using high-end workstations for editing "need Gigabit Ethernet dedicated bandwidth. For them, I don't see eliminating my wires."

*Wexler is an independent networking technology writer/editor in Silicon Valley. She can be reached at joanie@jwexler.com*

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# In Their WORDS

Vendor Solutions for Your IT Challenges

**COMPANY:** Network Instruments, LLC

**OVERVIEW:** Although advanced network troubleshooting tools are readily available, many IT professionals continue to take the old "trial and error" approach to solve problems. AAA East Central utilizes Network Instruments' Observer® Suite along with 60 probes across the entire network infrastructure to proactively monitor the network, resulting in happier users and customers.

**CHALLENGE:** Attempting to resolve an issue is challenging and time consuming if you can't first identify the cause.

**SOLUTION:**

- Abnormal Activity:** Knowing what device is causing an unusual amount of activity can be the key factor in resolving a situation. "We consistently use Observer's Top Talkers to see if there is any unusual activity," said Coleman Jennings, senior network engineer. "It's a big problem when a device other than servers, routers, or anyone in the IT department ranks high on Top Talkers."

- Server Overload:** In one case, Jennings identified an end user transferring a large number of files to a server. He investigated further and discovered that an employee was backing an entire hard drive to that server. "Through Top Talkers I was able to track down the person" Jennings said. "Had I not stopped that person, all the activity would have overloaded the system."

- Application Degradation:** On another day, an application responsible for providing Emergency Road Service stalled. Jennings drilled down with Observer's Connection Dynamics for a packet-by-packet display of the application's communication with each client. "The time analysis clearly showed there was a problem with the application, which I was able to immediately address — restoring full service to our customers," Jennings said.

**Measurable Results:** Observer monitors network communication around the clock to ensure that AAA East Central constantly receives the information resources needed. "Observer is like having an employee on site at all hours to manage the network," said Portia Ulinski, CIO. "So far Observer has prevented us from experiencing any downtime."

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**COMPANY:** Kentrox

**OVERVIEW:** Kentrox is a leading supplier of high-speed network access equipment, including the award-winning QoS appliance, Q-Series QoS access routers, CSUs, DSUs, ATM access concentrators, and wireless access products.

**CHALLENGE:** Quality of Service (QoS) is becoming increasingly important for many organizations. Applications such as Voice over IP (VoIP), video, and business systems compete with other less critical traffic for limited network resources, especially at the Wide Area Network (WAN) access point. Limited resources can create data loss or delays in the flow of information. This is particularly true with VoIP — delayed voice or dropped calls are just a few examples. The need for consistent, guaranteed performance has become increasingly vital. Network managers can not always afford to just keep buying bandwidth to solve the performance problems in their network. To achieve a successful networking solution and to protect the performance of critical business applications without adding bandwidth, companies should adopt a QoS solution.

**SOLUTION:** Many organizations have realized the need for QoS in a network. Whether a router with QoS is needed or if there is already a router in place without QoS, Kentrox has the solution. The award-winning Q1300 QoS Appliance can be added to a network with a router already in place. The QoS appliance monitors and prioritizes traffic to manage bandwidth without the need to replace existing routers. The Q1300 combines the features of a QoS appliance and Ethernet switch into one easy-to-use network access device, for the very affordable list price of \$735.

The Kentrox family of QoS routers provides an all-in-one networking solution for small and medium businesses and branch offices. Customers get the function of an IP router, QoS appliance, VPN, firewall, WAN access, and an Ethernet switch that protect and prioritize Voice over IP (VoIP) and other critical applications. Integrating six devices into a single device significantly reduces capital outlay and management and maintenance expenses over the life of the product. List price starts as low as \$895.

Want to find out more? Visit the Kentrox website to read a whitepaper titled "Quality of Service — What is it and why do you need it", test drive the QoS routers or appliance, watch a 10 minute on-demand demo of the Q1300 QoS Appliance, or learn more about the Kentrox QoS offerings.

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## VoIP

continued from page 50

Training is another often-overlooked area. IT executives cited training as one of their key recommendations to peers based on lessons learned in their own projects. Value-added resellers and vendors often will include training as part of the deal. But several IT executives suggest that vendors invest more in consistent, nationwide training programs — even if they must charge for them.

"Part of the problem is finding training," says the CTO of a healthcare company. "We don't have a \$2,000-per-engineer budget, but we do provide training piecemeal."

In fact, the amount organizations are spending on training has decreased since 2004. For example, small companies were spending about \$2,500 per person on training in 2004, and they're now spending closer to \$2,000.

Nemertes recommends internal IT staffs train users on the new handsets and features whenever possible. The best approach is to schedule 20- to 30-minute sessions with small groups of users and teach them the basics.

Rather than trying to force all users to use all features and applications at the same time, companies that have installed additional features (for example, unified messaging or real-time communications dashboards) should solicit tech-friendly trial users who will build consensus among their peers. Before long, users will be asking for the "cool new feature" that Bob in the next cube has been using.

### Cost savings

The specific areas vary in which companies find cost savings, but companies almost always do find some. The most important thing to remember when creating a business-case analysis is that each company's savings depends greatly on architecture, vendor or carrier selection, application rollout plans and staffing levels, among other factors.

Generally, organizations save money (or increase top-line revenue) the most in a few areas: staffing, ongoing management and administration, IP audio- and video-conferencing, telecom circuits, cabling new buildings, and employee productivity.

#### • STAFFING:

When they start using VoIP, organizations typically save on their staffing requirements, as well as the money they spend on outsourcers and consultants. However, a small percentage (5%) said they had to increase their staffs because of VoIP. In those cases, they added one to three employees, regardless of overall staff size.

The average personnel savings has increased from 2004, when organizations reassigned or eliminated an average 0.74 positions, at \$76,830 per year. This year the figure, when averaged among all organizations, is 0.76 positions, at \$81,240 per year.

Nearly one-third of the participants said they saved on staffing costs. When the numbers were run for only those organizations, the average staff savings jumped to 1.46 employees, or \$192,584 in salaries and consulting costs.

Participants said they typically reassign people rather than walk them to the door. In addition, some of the personnel savings comes from cost avoidance.

"If I had to go with TDM, I'd have to hire more people," says the global telecom director of an entertainment company with a growing, 2,500-person VoIP rollout. "I'm working with 20% to 40% less with IP."

#### • MANAGEMENT AND ADMINISTRATION:

Exactly what are these staff members doing, and how much time are they spending maintaining the voice network? First, they generally don't distinguish between maintenance and troubleshooting. It's all just managing the voice network.

What that includes is making sure IP PBXs, handsets and softphones are up-to-date on the latest revisions; troubleshooting performance problems or outages; moves, adds and changes (MAC); and monitoring overall performance.

Some — typically small and midsize — organizations are starting to outsource the day-to-day management of VoIP systems. "We're considering eliminating a person and outsourcing the actual maintenance of the system," says the IT director of a large law firm. "There's not enough to do to keep someone with those skills on-site."

Savings on MACs are one of the most important ways organizations justify their VoIP rollouts. Overall, participants spend an average of \$124 on MACs. This number includes MACs done internally and externally. The cost ranges from \$29 to \$450: At the low end are internal MACs done by an efficient, experienced and/or low-paid staff. At the high end — generally in large cities — are external MACs.

The number of MACs increases with company size, not surprisingly, and ranges from 197 to 136,020. MAC penetration, however, isn't as dependent on company size (penetration is the percentage of MACs based on the total employee base).

The big shift this year is that on average, organizations make 1.28 MACs for each employee. Realistically, at most organizations employees don't change offices more than once a year. What happens is more like a chain reaction. One person leaves the company, and three to five MACs result — one for the person leaving, one for the person who wants that office, one for the person who wants the next-vacated office, and one for the replacement.

**See VoIP, page 54**

### Benchmarks for VoIP deployments

There are four spending benchmarks: start-up costs, capital expenses, training and management.

#### MEDIAN START-UP COSTS

Fewer than 100 users	\$143 per user
More than 100 users	\$53 per user

#### AVERAGE CAPITAL EXPENDITURES

VoIP implementations, all sizes

IP PBX	\$448,221
IP PBX, messaging included	\$562,024
IP handsets	\$580,799
Network upgrades	\$1,398,527
Voice mail/UM	\$54,333
Audioconferencing	\$182,463
Management	\$100,000

#### RECOMMENDED TRAINING

Deployment size	Number of locations	Users to train	Cost per user
Very small	Fewer than 5	0 to 1 (0 = outsourced)	\$2,000
Small	6 to 20	1 to 2	\$2,000
Midsize	21 to 250	3 to 5	\$1,800
Large	251 to 1,000	10 to 15	\$1,500
Enterprise	1,001 or more	15 or more	\$1,500

#### RECOMMENDED MANAGEMENT BUDGET

Deployment size	Number of locations	Budget
Very small	Fewer than 5	Freeware, IP PBX tools, carrier tools
Small	6 to 20	\$25,000 to \$50,000
Midsize	21 to 250	\$75,000
Large	251 to 1,000	\$100,000
Enterprise	1,001 or more	\$100,000+ (depends on the configuration; requires consultation)

SOURCE: NEMERTES RESEARCH

## ► Management costs

When measuring management cost per user by vendor, Nortel deployments are the most expensive to manage, primarily because many are hybrid, and customers still require staffs to maintain the TDM gear.

Nortel costs \$268 per user to operate in smaller rollouts, and \$87 in larger rollouts. ShoreTel is the least expensive to operate, at \$13 per user for smaller rollouts and \$10 per user for larger rollouts.

In reviewing total overall costs for maintaining a VoIP system, however, Cisco, at \$256,750 per year, is the most expensive for implementations with more than 1,000 units, and, at \$124,266 per year, it's also the most costly for rollouts with fewer than 1,000 units.

Those four vendors garnered enough statistical response to be broken out individually.

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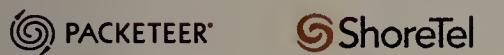
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## VoIP

continued from page 52

In moving to VoIP, MACs become very simple. The time involved for a TDM MAC is 30 to 90 minutes, but an IP MAC takes 10 minutes or less. The total cost savings, depending on the number of MACs at a given organization, can therefore be significant.

### • IP CONFERENCING.

Another area of savings is video- and audioconferencing. The payback period is six to 12 months when organizations replace an ISDN-based audio- or videoconferencing system with an IP system. Typically, companies pay \$200 to \$300 per hour for ISDN-based videoconferencing services (and as much as \$2,000 for global calls), and 6 cents to 12 cents per minute for audioconferencing services.

Several organizations say they're using IP video- and audioconferencing for internal communications, which can be 10% to 75% of their audioconferencing calls and 30% to 60% of their videoconferencing calls, depending on the industry. They use service providers for external calls; typically these are ISDN-based services, but they'll use more IP-based services as the carriers migrate to IP.

By shifting from ISDN to IP videoconferencing, organizations can see a payback in 12 to 38 months, based on the averages from the Nemertes study.

Payback periods are even more compelling for audioconferencing: 1.4 to 5 months, based on averages from the study (see "Benchmarking VoIP savings").

### • TELECOM CIRCUITS

By integrating access lines and consolidating unused capacity on WAN links, organizations report they're saving as much as 50% on their network service costs.

### • CABLING

For new offices, cabling costs drop by 40% to 50%, because there's no need to run three to four drops per desktop. Instead, companies can run one or two drops per desktop, eliminating the cost of the cable and, more significantly, the labor to do the job.

### • EMPLOYEE PRODUCTIVITY

Though difficult to measure, organizations are seeing improved productivity when they roll out VoIP and associated collaborative applications. These savings are mostly anecdotal, however.

For example, hospitals save on nurses' salaries by deploying wireless VoIP phones. They trim 15 to 30 minutes off each eight-hour shift of a nurse, nurse technician or unit clerk in a hospital setting. That translates to 234 to 548 hours per year, per shift, per employee that can be devoted to other tasks. With an average loaded hourly salary of \$28, hospitals save \$6,552 to \$13,104 per nurse, nurse technician or unit clerk per year.

*Gareiss is executive vice president and senior founding partner and CFO for Nemertes Research. She can be reached at robin@nemertes.com.*

## Benchmarking VoIP savings

Staff savings and less expensive audio- and videoconferencing can add up.

### ANNUAL PERSONNEL SAVINGS

	All participants	Participants that reduced staff
\$ saved	\$81,240	\$192,584
Number of employees	.76	1.46

### AUDIOCONFERENCING COSTS

Average minutes/month	<b>\$1,200,000</b>
Average per-minute rate	<b>\$0.079</b>
Total monthly cost	<b>\$94,800</b>
Average IP audio bridges	<b>\$88,000</b>
Operational start-up	<b>\$48,000</b>
Payback in months (all calls)	<b>1.43</b>
Payback in months (50% of calls)	<b>1.88</b>
Payback in months (30% of calls)	<b>4.78</b>

### VIDEOCONFERENCING COSTS

Average hours/month	<b>80</b>
Average per-hour rate	<b>\$250</b>
Total monthly cost	<b>\$20,000</b>
Average IP audio bridges	<b>\$162,189</b>
Operational start-up	<b>\$68,000</b>
Payback in months (all calls)	<b>11.51</b>
Payback in months (50% of calls)	<b>16.33</b>
Payback in months (30% of calls)	<b>38.36</b>

## Breaking the costs down by vendor



Nemertes' benchmark of Avaya, Cisco, Nortel and ShoreTel garnered enough statistical responses to be counted individually.

When we asked respondents how much time they spent on operational start-up, measured in minutes per user, Cisco came out on top at 250 minutes per user, followed by Nortel at 186 minutes, Avaya at 77 minutes and ShoreTel at 69 minutes.

That makes sense because Cisco rollouts are typically larger and more complex than the other vendors'. Cisco IP telephony systems often require additional network upgrades, which must be taken into account during the planning and installation phases. ShoreTel deployments are typically smaller and less complex than the others.'

For example, Cisco's VoIP rollouts include the highest average number of VoIP handsets: 3,344 per organization. Avaya has the second-highest average number of handsets (2,393), Nortel averaged 722 handsets and ShoreTel

averaged 522 handsets.

When it comes to translating time into money, Avaya's average cost per user is third lowest, even though it has a relatively high average number of users. Part of that can be explained by the fact that the cost of an IP PBX deployment is spread across more users, so the average cost per user is lower. Also, Avaya rollouts often are limited to the contact center, which means less complexity than when the technology is deployed organizationwide.

That's different from Nortel, which serves more midsize businesses than Cisco or Avaya. With fewer users to absorb the central PBX deployment costs, the per-user costs are higher.

### Per-user costs

The research showed that organizations are spending a median of \$143 per user for projects with fewer than 1,000 users and a median of \$53 per user for rollouts of more than 1,000 users.

For implementations of fewer than 1,000 units, ShoreTel costs the least

per user, at \$105. Cisco, Nortel and Avaya are fairly close in operational start-up costs, though Nortel's and Avaya's are higher than Cisco's. Interestingly, Nortel and Avaya are within \$1 of each other, indicating some stability and consistency in the effort involved with the legacy TDM vendors.

For installations of 1,000 units or more, we see lower costs per user overall. Much of the implementation cost is in planning the overall project and installing the core IP PBXs. The ability to spread those costs among a larger user base reduces the cost per user. ShoreTel again comes out on top, at \$31 per user, followed closely by Avaya at \$50. Cisco is the most costly, at \$165 per user, followed by Nortel, at \$132 per user. The figures don't depend on what the vendors charge, but on how easy their products are to install — and how much expertise their customers possess.

### Capital costs

Equipment costs round out the initial

total investment for a VoIP implementation. Organizations spend an average of \$878 per user for IP telephony switches and handsets in rollouts of fewer than 1,000 users, and \$628 per user in rollouts of more than 1,000 users. One notable shift year over year is that prices have become more consistent among vendors. In other words, the per-user pricing within each size category is reasonably close in most, but not all, cases.

ShoreTel is the low-price leader for smaller implementations. Avaya has the lowest prices for larger implementations — a departure from the past two years, when Avaya's pricing was among the highest.

When assessing all capital costs — network upgrades, voice mail or unified messaging, conferencing and management — associated with a VoIP deployment, the numbers obviously increase.

Nemertes expects these figures will increase as organizations require and budget for more management tools and collaborative applications.

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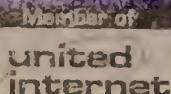


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## E-MAIL NEWSLETTER SHOWCASE: Identity management

# An intelligent electronic rental car assistant

BY DAVE KEARNS

One of the high points of the recent Internet Identity Workshop in Silicon Valley was Doc Searls' session on "Intention and

Identity".

Searls, senior editor at *Linux Journal*, spends lots of time in rental cars and much of his public speaking (and private speaking,

for that matter) revolves around renting and driving automobiles (for example, Searls' First Law of Car Rental: It doesn't matter what kind of car you want to rent. You're

going to get a Chevy Cavalier).

What he based the roundtable discussion on was his desire to specify the time and place he'd like to rent a car and a fairly

detailed description of the car and then have multiple rental agencies respond with quotes. Not like the experience on Orbitz or Travelocity, where you get a list of car types (for example, "Toyota Corolla or similar" which, as Searls says will get you a Chevy Cavalier). No, Searls wants to be able to specify a 2005 Ford Explorer with four-wheel drive, satellite radio and a ski rack and have the assurance that this is what he'll receive. Of course, he could call each rental company to see what they offer, but that takes a lot of time. Add in that he would weigh many factors when deciding — price, refueling charges, frequent flyer points, extra credit for companies with good maps. It could take days to track down all of that information.

But suppose Searls had a PDA. One that understood all of his preferences, knew his rental history, had the ability to contact all of the available rental companies at every location worldwide and was able to work 24 hours a day, seven days a week. Such an agent, or avatar, is solely controlled by the user and has full access to all of the user's attributes (and their values). The avatar would be self-training — learning from each foray into the online world on behalf of the user. Over time, the user could enable the avatar to make purchases and agreements as the user's representative. Now that's an open source, identity-based application/service I'd like to see. Work on it, then come to the next Internet Identity Workshop and share it with us.

Kearns is a writer and consultant in Silicon Valley. His company, Virtual Quill, provides content services to network vendors: books, manuals, white papers, lectures and seminars, marketing, technical marketing and support documents. He can be reached at [info@vquill.com](mailto:info@vquill.com).

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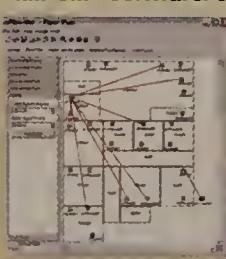
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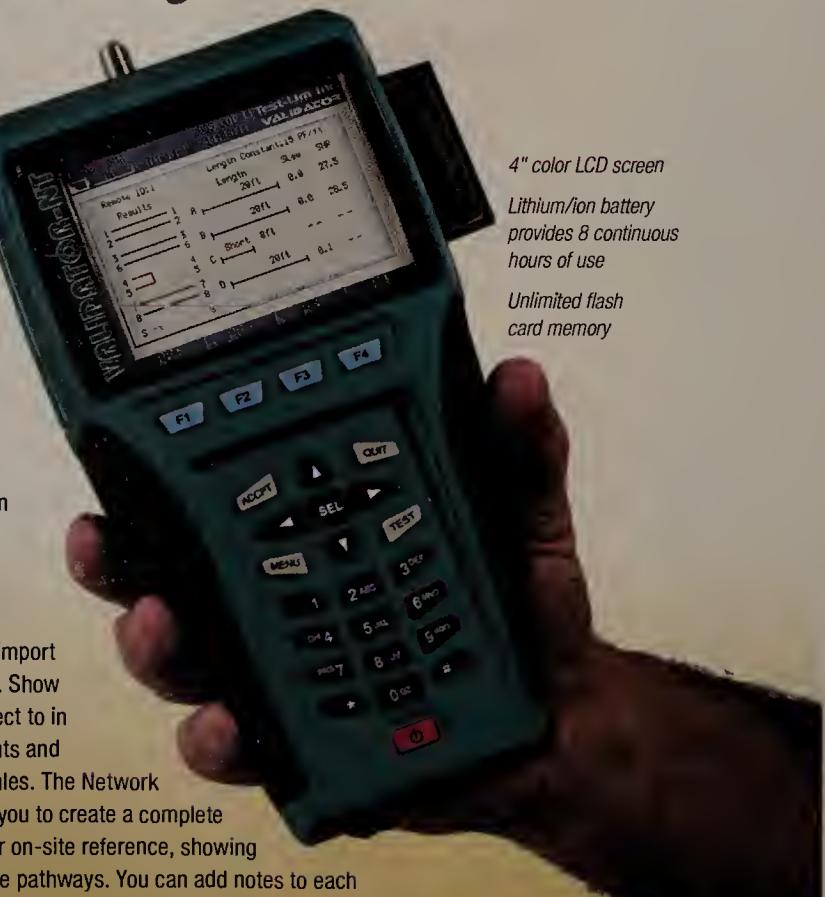
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# MANAGEMENT STRATEGIES

CAREER DEVELOPMENT ■ PROJECT MANAGEMENT ■ BUSINESS JUSTIFICATION

## Data center moving day

Proper planning ensured the successful relocation of retailer Boscov's IT operations.

BY JENNIFER MEARS

**W**ith a 24/7 e-commerce storefront and more than three dozen stores spread across the mid-Atlantic region, Boscov's doesn't have time to close its doors for a data center move. So, when technical support manager Joe Poole heard rumblings about an impending migration, he knew the project would be daunting.

For one thing, the atmosphere around the move was different from what Poole had experienced when Boscov's shifted data centers in 1989. "I don't think they could have spelled 'Web' back then," Poole says of the North Reading, Pa.-based retailer. "I think we just shut things down and did the move on a Sunday."

It wouldn't be so easy this time. With Boscov's operating as an always-on business, the challenge was to transfer the company's IT operations without causing a major outage or lengthy downtime. There were terabytes of data residing on disks and a tape library that had to be moved — a project Poole estimated would take at least 24 hours.

"Without the tape library there was no batch production, and there was never going to be a day — especially as we were looking at September, when we start to get busy for the Christmas season — that we could be down for 24 hours," he says.

Boscov's was moving its IT operations to become the inaugural tenant of a new IT service provider, Directlink Technologies. Directlink is one of several projects launched by Boscov's owner, Albert Boscov, supported by Pennsylvania Gov. Edward Rendell and aimed at revitalizing an area of Pennsylvania hit hard by job losses.

Housed in the former General Public Utilities building in Reading, Directlink has more than 80,000 square feet of data center space, as well as access to a broadband fiber-optic network that reaches into the Northeast and Middle Atlantic and Midwestern states.

"In order to make [Directlink] viable to

potential customers, Mr. Boscov ... decided there should be a presence in there," Poole says. "That's where we came in."

The new location — with raised floors, multiple power supplies and backup generators — represents a step up from what Boscov's was operating in before. "We had been in a facility that was built in the 1920s for Rosedale knitting mills," he says.

Although the physical distance between Boscov's and the data center was minor — just 10 miles — the logistics were overwhelming. With careful planning, however, Boscov's completed the move more quickly than expected and ended up with an upgraded infrastructure that will support the rapid growth of the company, Poole says.

Poole adds that the retailer now is positioned for long-term savings, though he wouldn't disclose specifics. "As it turned out, we're going to open 10 stores this year, so the extra capacity was well worth it," he says.

When rumors of the move started circulating in March and April of 2005, the first thing Poole did was to call business partners Distributed Systems Services, IBM and Sirius Enterprise Systems Group. Boscov's realized it was ready to upgrade equipment, and its leases on existing equipment were set to expire in March.

"We were lucky in the sense that our equipment leases all ran out at the same time . . . and there were not that many months remaining on the leases that would have to be rolled over," Poole says.

Boscov's would bring into the new data center a new mainframe, a new direct-attached storage device (DASD) and a new

tape library with upgraded drives, and keep its existing equipment running in the old location.

It was this kind of infrastructure musical chairs that let Boscov's move without suffering an outage. To support that, Boscov's network team had to recreate its existing network in the new facility and then link the two.

"We had to build a whole new infrastructure of Cisco routers. This had to be a seamless operation, meaning that our network that was in [the old data center] had to reappear in the new facility like nothing ever happened," Poole says. "You couldn't go in and redefine everything. You had to move it. So our very talented networking crew was able to bridge two networks together 10 miles apart so people on either side of the fence would be able to access the system."

Boscov's settled on Sept. 24 as moving day. At 7 a.m. Poole and his team began moving

site continued running through this move, which was completed around 4 p.m. The old z900 continued running the show, though it was accessing data at Directlink remotely via fiber.

Once the stores closed at 9:30 p.m., the z990 was brought online, and the z900 was retired. The tricky part was to make sure the machines didn't confuse things because they looked the same to the network. Boscov's network specialists handled this with VPNs and routers.

"That's one of the things you really have to think about when doing something like this: not messing up your network," Poole says. "Make sure that is thought through, because you're going to have pieces of equipment with the same names that may be running at the same time. Think about how you're going to filter out traffic that shouldn't be going into your production world."

IBM had already assembled the tape library at Directlink, so once the data was moved and the new mainframe turned on, the hard part was done, Poole says. The equipment in the old data center was disconnected and packed up for shipment back to IBM.

As for staff, servers and other peripherals such as printers, the transition was more gradual. Over the next few weeks, the staff packed up the contents of their existing cubicles and transferred them to cubicles in the Directlink facility. Boscov's 80 servers were moved a few weeks later.

"Office functions don't normally get used over a weekend, so we waited several weeks and picked a Saturday morning after everybody had recovered," Poole says.

In all, a project that normally would have taken three to six months was done in less than two months without a major outage, Poole says. A big reason is that Boscov's took the time to plan the move carefully and reassure staff along the way.

"When it gets down to crunch time, people tend to get a little nervous, a little upset, and there is a great feeling they're not going to be able to pull it off," Poole says. "It's a matter of reassuring everybody that this is going to work. Management has to have the positive attitude. When you know what you're going to do and you know the pieces are in place, it will be successful." ■

### Making moves

Moving a data center is no easy task. When changing locations, keep an eye on the details:

- Prepare the environment: Figure out what kind of air conditioning and power you'll need in the new place and make sure it's available.
- Prioritize: Move the most important equipment first and operate secondary servers in the old location remotely, if possible, to break the move into easier chunks.
- Watch the little things: Make sure cords have the right connector ends and that there are enough power outlets for what you're planning.
- Support staff: Make sure you're clear on move plans to keep staff motivated.
- Power up slowly: As you bring things up in the new data center, power systems up slowly — and separately — to ensure operating systems, applications and equipment are functioning correctly.

z/VM data from mainframe storage to the new IBM DS8100 DASD Shark at Directlink. The Web site was offline for this move but was back up and running by 11 a.m.

A similar process was used to move z/OS data to the Shark, though the Web

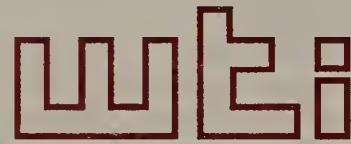
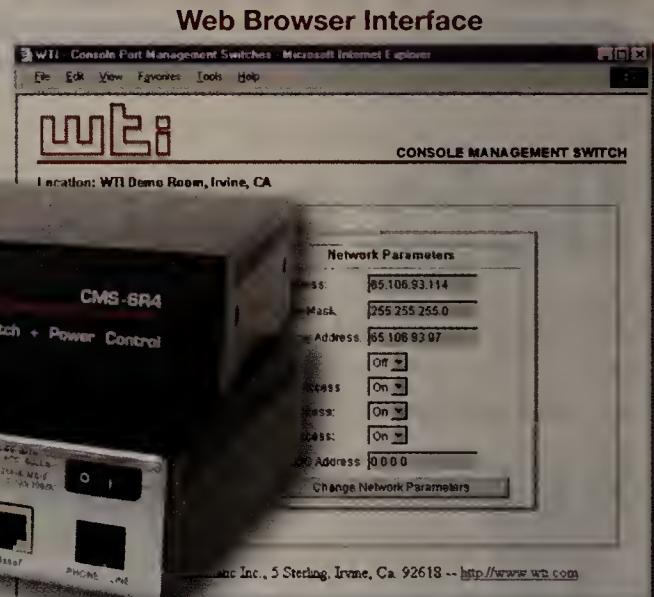
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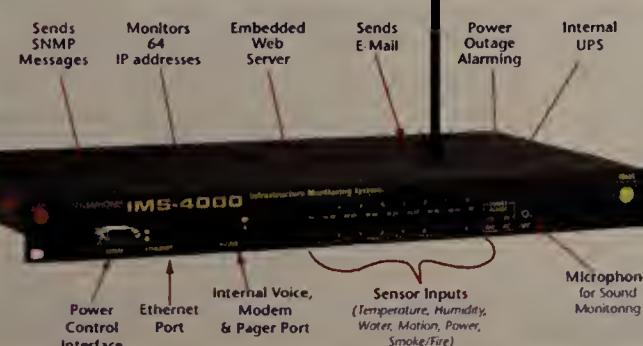
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## Library

continued from page 1

Library. "We had to put everything in a very bouncy truck and move it to the new building in that temperature."

The only casualty was a small server that ran the library's touch-tone renewal system, which lets patrons renew books over the phone. When Kinsmith extracted the phone board from the dead server, she found it wasn't compatible with any of the library's newer equipment. So her team got industrious. "One of my staff had an old computer sitting in his garage. He brought it in and got the board to work on it."

Fortunately no other impromptu repairs were required. The rest of the gear survived the move to the new library, which is set to open on May 20. The 353,000-square-foot building is the flagship of the city's 15-site public library system. Designed by architect Cesar Pelli, it has a five-story glass atrium topped by a prominent wing-like extension that juts out beyond the roofline and over two city streets.

Inside, the \$125 million library is laced with technologies to make the city's physical and digital assets accessible to patrons. There are 300 desktops and 16 laptops for public use, and wireless Internet access is available throughout the building. Electronic signage and maps are linked to the library's digital catalog to show the locations of items.

Eight self-checkout units let patrons check out books on their

own. There's also a book-sorting system from FKI Logistex that does a lot of the heavy lifting for library staff — a group made smaller in recent years because of budget constraints. Akin to sorting systems used in retail distribution centers, the book-handler reads bar codes and routes books along conveyor belts to the proper bin or pushcart, depending on whether a book is destined for in-house shelving or shipment to one of the other city libraries.

"The sorting system is able to sort 6,000 items in an hour. I just say that number and think, yippee!" says Betsy Williams, director of collection and technical services.

### New building, new network

Getting into the new facility required the library's IT staff to move their data center twice — first to a temporary site in 2002, then into the new building. But the effort was worth it: Construction of the new building provided an opportunity to upgrade the telecom infrastructure that serves the city's entire public library system. There's a new network, along with a new IP phone system.

"When you open a new building like this, there's a lot of anticipation. People haven't had access to a good chunk of the collection for more than three years, and expectations are high. We realized if we're going to have a state-of-the-art building, we need to have state-of-the-art infrastructure," Williams says.

A 10Mbps fiber WAN links the

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## Technology contents

At the new Minneapolis Public Library, hardware and software link people and collections.

Tech feature:	Hands-free voice communications	Automated book-sorting system	VoIP	Public PCs
<b>Vendor:</b>	Vocera Communications	FKI Logistex	Mitel Networks	Gateway
<b>Significance:</b>	With a badge worn on a lanyard, library staff can use voice commands to place a call, as well as send and receive text messages and alerts.	The system scans returned books and distributes them via conveyor belts to carts for in-library shelving or to bins for distribution to branch libraries.	3300 IP Communications Platform is an IP-PBX with unified messaging, auto-attendant and automatic call-distribution features.	PCs bundle hard-drive components and a flat-panel LCD screen in a single, space-saving device.

central library and 14 branches, replacing 1.5Mbps T-1 connections among the facilities. At the new central library, a 10Mbps connection to the Internet replaces three T-1s. "The new WAN is something our staff and patrons greatly appreciate out in the branches, where it could take 20 to 30 minutes for a staff computer to log on the old network," Kinsmith says.

In all the city's public libraries, voice calls are now routed over the fiber WAN to IP phones. The backbone is Mitel Networks' 3300 IP Communications Platform, an IP PBX with unified messaging, auto-attendant and automatic call distribution features.

One of the benefits of the IP phones is their portability, Kinsmith says. A staff member relocating to a new office takes the phone to a different desk, plugs it in, and the system recognizes the user's new location.

Staff in the central library have a new way to stay connected when they're away from their desks. A hands-free voice system

from Vocera Communications operates on the library's wireless network and lets staff send and receive calls, text messages and alerts. With the Vocera devices — which weigh less than 2 ounces and hang from lanyards — users can contact individuals or broadcast messages to predefined groups. They can use voice commands to initiate a call, such as "Call Tom Smith."

The Vocera system supports the library's efforts to bring staff and patrons closer. Librarians remain connected with each other, even when they're scattered among five floors and 2.4 million books. "We're trying to interact with our patrons by spending more time away from the desk and out in the building, helping people,"

Kinsmith says.

### Rolling with the punch list

The Vocera system wasn't part of the original building plans — nor was the 802.11b network it uses. In the early planning stages for the new library, IT staff envisioned a limited zone for wireless Internet access. But as the building design evolved, so did users' wireless expectations, Williams says. The result is buildingwide wireless access for staff and public. In addition, there are plans to outfit all the libraries in the city system with wireless networks by year-end.

IT staff had to deal with another unexpected requirement: Providing bandwidth and data center space for building systems. "One of the things my staff and I discovered as we made plans to move into this building is how much of the building controls are wireless and how many of them are using our network," Kinsmith says.

For example, the thermostats are wireless, and the application that controls the building's window shades runs on a server, she says. "This building is controlled by computers, and those computers need to be on the network somehow."

Even as construction neared completion, the surprises kept coming. Two months before the building was due to open, Kinsmith and Williams learned about another system — wireless docks for iPods in the teen center — only after it was written up in the local *Star Tribune* newspaper.

The pair takes these surprises in stride, laughing about how a newspaper reporter knew about the library's plans to purchase the iPod docks before they did.

Part of the reason they can laugh is because they've done

their job well. The infrastructure in the new library — including raised floors that make cabling easily accessible — is designed to accommodate the systems and applications that emerge as libraries go more high-tech.

"We know that over time there may be fewer books, more computers. We found in the old building that we couldn't add computers because of the cable and wiring issues," Williams says. "The last thing we want in the new building is to be held back by an inflexible infrastructure."

In the new central library, staff considered physical and digital assets when configuring the spaces. Collections are laid out around technology, Williams says. For example, books related to a topic such as genealogy or American history are laid out in clusters along with meeting places and banks of computers that are stocked with related Web content, databases and digitized library resources.

Having more PCs for the public to use and greater network capacity are key to make these "learning commons" work. "We have greater potential for downloadable audio and video. The service we can provide via our Web site is greatly expanded, and the speed with which it's delivered is greatly increased," Williams says.

Not only is the tech quotient higher than in traditional libraries, but also the atmosphere is more relaxed. A patron can borrow a laptop, grab a cup of coffee from the Dunn Bros. coffee shop on the ground floor, and find a spot to work near one of the library's four fireplaces. Yes, coffee and soda are allowed in the library, as long as they're in a covered container. This is not your parents' library. ■



## BACKSPIN Mark Gibbs

# Evolving to be better

**F**ollowing the BackSpin column "Darwin and spam" ([www.nwdocfinder.com/3456](http://www.nwdocfinder.com/3456)), I got a fair amount of feedback.

Reader Brian Fahrenheit (a pseudonym because, he claims, his letters get him in hot water) wrote: "Your article on spam eradication states all attempts to kill spammers actually contribute to their survival. This curious phrasing of Darwin's thesis is correct if spammers have the means to adapt to all eradication attempts."

Correct, I did contend that attempts at getting rid of spammers contribute to their survival but it is their survival collectively, not individually. This leads to Fahrenheit's second statement that my phrasing of Darwin's thesis is "curious." Darwinian evolution is inherent in all systems of imperfectly replicating discrete entities that compete for resources in a shared finite environment.

Consider frogs breeding happily in a stream. One day arsenic leaches into the water. Some frogs are very sensitive and die off producing no offspring, while less sensitive ones manage to produce a few offspring before they die.

For a while the reproduction rate of frogs is low, but the imperfect copying mechanism eventually produces frogs that can tolerate arsenic. The new version of the frogs starts to reproduce at a greater rate than the poorly tolerant

ones, and in a few generations their duplication instructions, their genome, becomes dominant. Eventually only arsenic-tolerant frogs will be in the stream.

The same principles apply to spammers: Given low doses of arsenic ... er, sorry, being whacked out of existence by laws, a few spammers eventually will appear that are capable of surviving those laws.

Reader Bob Moulton pointed out that the same "principle applies to ... digital rights management copy protection. We're just breeding a better species of crackers. Witness the Starforce protection scheme, which was cracked the day after it was released."

You might argue that because human brains full of ideas, emotions and a desire to drink tea are involved, Darwinian forces don't apply, but just consider: Most of the guys who run the biggest corporations in the world aren't Einsteins. That's not to say they aren't really smart, just that they aren't the smartest folks out there, but they are the best adapted to running corporations.

What is different about human brains is that the ability to spam or run a large corporation can be learned and passed on by teaching or by example to those who are smart enough. Why are some people smart enough? Darwinian evolution ensured they pick up ideas and skills effectively — something that in the physical world of thousands of years ago was highly survival-oriented. And

here's a subtle issue: While the rewards of running a huge company successfully or sending out lots of spam are obvious in terms of financial gain, along with the cash comes biological advantages.

Ever see an old, rich, fat guy with an attractive, young wife? The chances are high that his genes, which we know are associated with a high level of survival skills, will be passed on. Humans are adapted to recognize such clues because they are survival-oriented, which is what evolution is all about.

But hackers in general don't make money or gain reproductive advantage, so is their evolution Darwinian? Sure it is. Moulton gave a good example: "Of the last four games [my son] bought ... two were great and two were dreck. At \$50+ a pop and that poor a good-to-junk ratio, the game makers (and record/movie companies) are just giving crackers and sharers incentives not to pay."

In any human activity where there is a course of action with a great enough incentive, humans have evolved to try to take advantage, even when the risk is relatively great. The result is that Darwinian-style evolution is creating humans who get better at anything with a desirable payoff, whether it be spamming, hacking or running large corporations.

*Stop banging the rocks together and write to [backspin@gibbs.com](mailto:backspin@gibbs.com) or post on Gibbsblog.*



## NETBUZZ News, insights and oddities

# More blogging off the cliff . . . lawyer-style

**Paul McNamara**

Here's the question before us today: Is calling a lawyer an extortionist redundant . . . or potentially libelous?

(Hint: Only one of the choices is a joke.)

A Marquette University Law School professor named Eric Goldman on his blog calls a highly publicized class-action lawsuit filed against Yahoo last week a "shakedown" and those who brought it "extortionists." You can access his blog through [www.nwdocfinder.com/3443](http://www.nwdocfinder.com/3443).

Among the alleged shakedown artists and extortionists are five law firms and seven lawyers, including Ben Edelman, who has been described as "the most respected" independent adware expert on the Internet by no less an authority than *Network World*.

I have no idea whether the lawsuit will prevail, but I do know this much: Goldman's characterization of those responsible for it would never have made it past any editor I know, as the words practically scream libel. And the tale may prove to be a cautionary one as your company contemplates jumping on the blog bandwagon.

The lawsuit ([www.nwdocfinder.com/3444](http://www.nwdocfinder.com/3444)) contends that Yahoo and its ad sales subsidiary, Overture Services, promised advertisers who paid higher fees that their ads would be placed on "premium" sites such as CNN, The Wall Street Journal — and Yahoo. However, according to the suit, the ads also were distributed via spyware and adware, as well as on so-called typo-squatting sites — not exactly premium venues.

Goldman, who according to his blog "holds leadership positions in the American Bar Association and the Computer Law Association," addresses the merits of the suit in a generally academic fashion before winding up for the big finish: "These lawsuits are nothing more than a shakedown for cash," he concludes. "Even unmeritorious class-action lawsuits are expensive to defend, so the plaintiffs' lawyers can exploit those defense costs for their personal largesse. They can make this argument to defendants: Settle with me for a fraction of your total expected defense costs, and we're both better off (defendants save some defense costs, plaintiffs' lawyers grab some personal loot). . . ." It may be cheaper for Yahoo to settle than fight," he continues, "but I hope

Yahoo doesn't reward the extortionists. Extortion shouldn't pay, and I hope the plaintiffs find this out the hard way."

Being curious more than anything else, I sent Goldman an e-mail asking how he'd defend his use of that language, fully expecting to receive something akin to backtracking in response.

"I see this lawsuit as a shakedown for cash," he repeated in his reply. "I see that process as synonymous with extortion. See Answers.com's definition of extortion: 'The obtaining of property from another induced by wrongful use of actual or threatened force, violence, or fear, or under color of official right.'"

As you might expect, the other lawyers Goldman skewers are not amused. Here's all Edelman would say: "The complaint [against Yahoo] speaks for itself. . . . Discussing Goldman's defamatory statements unduly dignifies them."

However, another of the plaintiff's attorneys, Thomas More Marrone of Feldman, Shepherd, Wohlgelernter, Tanner and Weinstock in Philadelphia, was a bit more expansive: "[Goldman] read a piece of paper that was filed in court and he's making an accusation of criminal activity, which I just think is irresponsible," Marrone told me. "It's like a guy standing on a street corner talking to his friends, except he's writing it down and disseminating it to hundreds, thousands, millions of people."

But is it more than irresponsible? I asked Eric Robinson, a staff attorney for the Media Law Resource Center, who said he couldn't comment on the particulars of this situation, but offered the following guidance: "In doing a quick search, I found court decisions holding both ways when dealing with similar accusations of 'extortion,'" Robinson said. "The legal issue would likely be whether the statements were actual imputations of a crime, or were 'rhetorical hyperbole,' essentially a statement of opinion, not of fact. The former could be considered libelous, while the latter could not."

Of course, hyperbole is the eye of the beholder . . . or juror.

*Go ahead and call me any name you want. The address is [buzz@nww.com](mailto:buzz@nww.com).*



#### \_INFRASTRUCTURE LOG

\_DAY 49: Things are out of control. Our system is just not secure, flexible or reliable enough. Gil bought some "infrastructure bloodhounds" online. He says they can sniff out any problem.

\_DAY 50: They can't. But IBM Tivoli Express middleware can. It's a series of I.T. management solutions designed and priced for mid-sized businesses. Secure, boosts uptime, and protects our data with automated backups. We even got help customizing and implementing it.

\_DAY 52: Remind Gil: Bloodhounds not as good at sniffing out problems as they are at chewing Ethernet cables.



**Tivoli. Express**

Get the Guide to simple, fast, secure I.T. Management at:  
**IBM.COM/TAKEBACKCONTROL/SIMPLE**

**IBM**®





#### \_INFRASTRUCTURE LOG

\_DAY 16: It's out of control. It takes people forever to access...everything. We can't get anything done. We're so inefficient. There's got to be a better way.

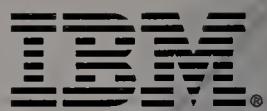
\_DAY 17: Gil says he's found one: aerodynamic bodysuits. He says everyone will be able to work faster and better now.

\_DAY 21: I've taken back control with IBM WebSphere Portal—a simple and fast start to a service oriented architecture. It works with what we have and integrates the apps, processes and info our people need to do their jobs effectively. Works with our customers and suppliers, too. Now we have a customizable interface that puts everything at our fingertips.

\_Productivity is up. Gil says that's great, but he refuses to take off his suit.

**WebSphere. Portal**

Download IBM's WebSphere Portal ROI Tool at:  
**IBM.COM/TAKEBACKCONTROL/PORTAL**



#### \_INFRASTRUCTURE LOG

\_DAY 35: Whoa! Came in today and found a black hole. Information goes in but doesn't come out. This is bad.

\_DAY 36: The black hole just sucked in three interns. HR is not pleased.

\_DAY 38: I've taken back control with IBM Information Management middleware. It's built on open standards. Totally scalable. Seamlessly unites all our critical information, whatever its source. Now our info has real business value that can help spur growth.

\_We got everything back from the black hole. Except the interns.



**Information Management**

See innovative IBM Info Management solutions in action:  
**IBM.COM/TAKEBACKCONTROL/INFOMGMT**